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Lifespan Development

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COLOR PAPERBACK BOOK ISBN-13	**978-1-711472-93-5**
B&W PAPERBACK BOOK ISBN-13	**978-1-711472-92-8**
DIGITAL VERSION ISBN-13	**978-1-961584-53-2**
ORIGINAL PUBLICATION YEAR	**2024**

2 3 4 5 6 7 8 9 10 CJP 26 24

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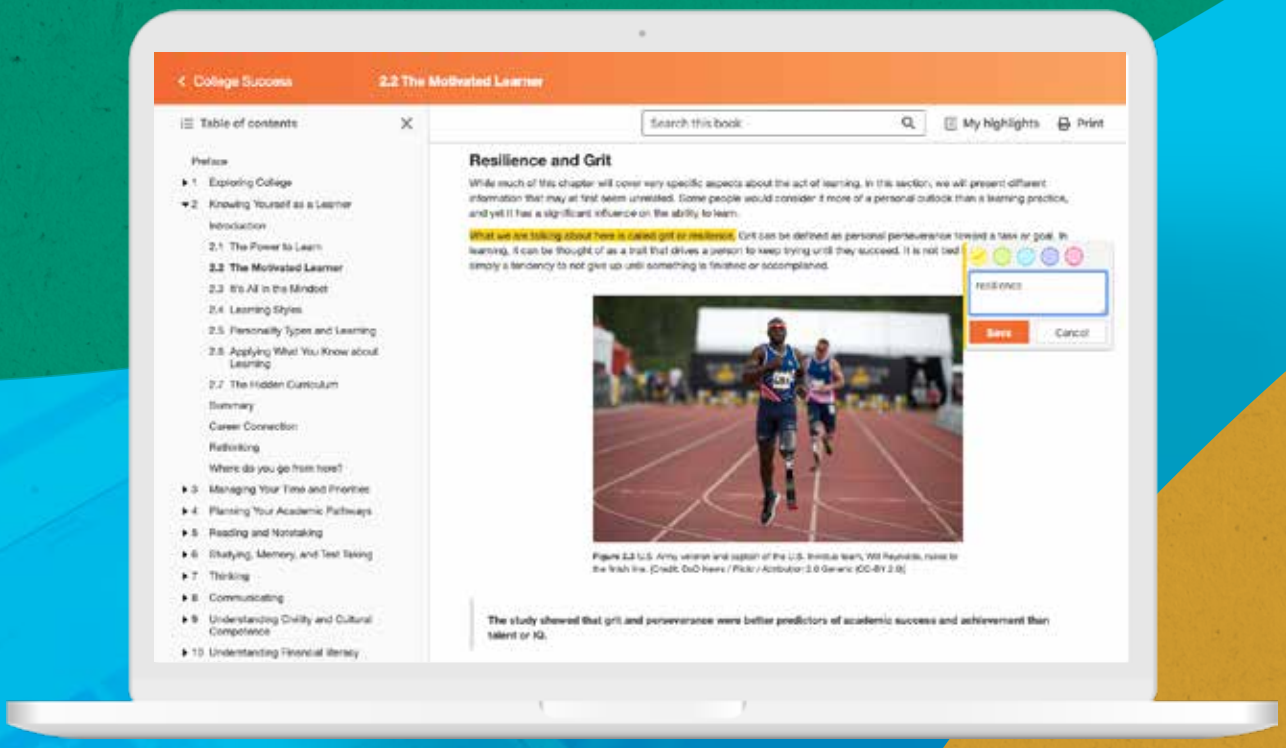

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Preface

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About *Lifespan Development*

Lifespan Development aligns to the topics and objectives of most introductory developmental psychology and human development courses taught across departments. Grounded in foundational theories and scientific research, the text teaches students about core aspects of human development—physical, cognitive, social,

emotional—across the lifespan. A primary goal of the book is to incorporate content, scholarship, and activities that explore a variety of perspectives that encourage all students to feel seen and included.

Most importantly, the text is grounded in sound, current scholarship. Both researchers and practitioners in the discipline sometimes have complicated and disparate views on issues that are simply part of understanding the lifespan and supporting people through its phases. *Lifespan Development* strives to openly address complex topics with scholarly responsibility and an effort to increase equity and inclusion in the research presented, as well as to foster student engagement in the classroom through relevant examples and applications. Focused on driving meaningful and memorable learning experiences, the narrative places concepts in contexts that give students the means to understand human development and how that knowledge can be applied to and improve their own lives and the lives of others.

Pedagogical Foundation

Learning Objectives

Every module begins with a set of clear and concise learning objectives designed to help the instructor decide what content to include or assign, and to guide student expectations of learning. After completing the end-of-module exercises, students should be able to demonstrate mastery of the learning objectives.

Key Features

- **It Depends:** Weaves scientific inquiry by presenting emerging research on topics that are complex, nuanced, and on which the scientific community may not have consensus.
- **Intersections and Contexts:** Highlights the interconnectedness of contexts, developmental systems, and the individual. It encompasses contexts such as culture, race, class, gender, and typical vs. atypical development.
- **Life Hacks:** Provide specific guidance on how students can apply the material in the chapter to improve their own lives and the lives of others.

Section Summaries

Section summaries distill the information in each section for both students and instructors down to key, concise points addressed in the section.

Key Terms

Key terms are bold and are followed by a definition in context. Definitions of key terms are also listed in the Glossary, which appears at the end of the chapter.

Assessments

A variety of assessments allow instructors to confirm core conceptual understanding, elicit brief explanations that demonstrate student understanding, and offer more in-depth assignments that enable learners to dive more deeply into a topic.

- **Review Questions** test for conceptual understanding of key concepts.
- **Check Your Understanding Questions** require students to explain concepts in words.
- **Personal Application Questions** dive deeply into the material to support longer reflection, group discussion, and life application of course concepts.
- **Essay Questions** require more complex and comprehensive analysis of concepts, including the intersection of topics as they are applied across the lifespan.

Answers to Questions in the Book

The end-of-chapter Review, Check Your Understanding, and Essay Questions are intended for homework assignments or classroom discussion; thus, only a limited number of student-facing answers for Review Questions are provided. Answers and sample answers are provided in the Instructor Solution Manual, for

instructors to share with students at their discretion, as is standard for such resources.

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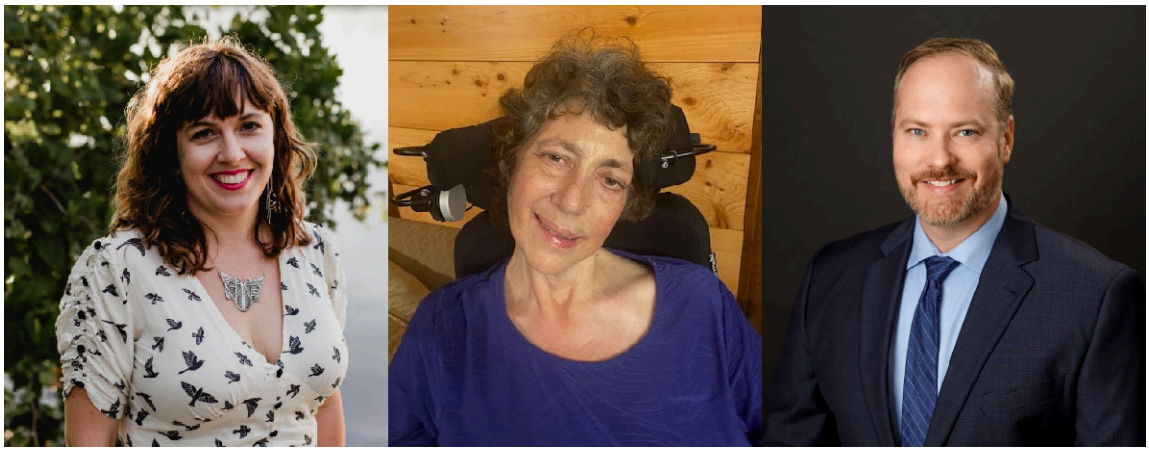

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Diana K. Riser, Catawba College

Diana K. Riser holds a PhD in Developmental & Biological Psychology with a Minor in Women's & Gender Studies from Virginia Tech. She is an Associate Professor of Psychology at Catawba College. Her teaching and scholarly work are focused on developmental psychology, risk and protective factors in human development, promoting resilience in survivors of child trauma, and promoting healthy parent-child relationships. In addition to her research in developmental psychology, she also does research on best practices in teaching and learning and has worked in various non-profit and public health areas to apply psychology to promoting healthy development. Diana is passionate about using the science of developmental psychology to improve lives and parent-child relationships. She currently is enjoying her own lifespan development with her spouse and two children.

Rose Spielman, Connecticut State Community College

Rose Spielman was the content lead for the OpenStax *Introduction to Psychology* textbook. She has worked as a licensed clinical psychologist for over 30 years, with the last ten years at the Connecticut Department of Developmental Services. She has also taught for decades, most recently at CT State Community College. She has a husband, two young adult children, and two rescue dogs. While working on *Lifespan Development*, Dr. Spielman was diagnosed with amyotrophic lateral sclerosis (ALS), a rare, fatal neurodegenerative disease, which attacks the body's motor neurons. Prior to her ALS symptoms, Dr. Spielman enjoyed bicycling, camping, and hiking with family and friends.

David Biek, Middle Georgia State University

David Biek is the Dean of the School of Education and Behavioral Sciences at Middle Georgia State University. David earned his doctorate in developmental psychology at Cornell University and completed his master's work at Columbia. His scholarly and applied work is focused on understanding the informal factors behind academic achievement in adolescents and young adults. David has served as co-chair for MaconAIM, a human service collaborative, as a board member for Carlyle Place – Atrium/Navicent Health in Macon, and he has organized a community-wide Thrive Summit in the middle Georgia region. He also serves on the statewide Executive Council for AARP Georgia. David lives in Forsyth, Georgia, with his wife and three children.

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Additional Resources

Student and Instructor Resources

We've compiled additional resources for both students and instructors, including Getting Started Guides, an instructor's answer guide, test bank, and image slides. Instructor resources require a verified instructor account, which you can apply for when you log in or create your account on OpenStax.org. Take advantage of these resources to supplement your OpenStax book.

Instructor's answer guide. The instructor's answer guide provides assessment support including comprehensive guidance for essay questions.

Test bank. With over 400 true/false, multiple-choice, fill-in-the-blank, and short answer questions in our test bank, instructors can customize tests to support a variety of course objectives. The test bank is available in Word format.

PowerPoint lecture slides. The PowerPoint slides provide images, key course concepts, and teacher notes as a starting place for instructors to build their lectures.

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Lifespan Psychology and Developmental Theories

1

FIGURE 1.1 Where are each of these travelers in Grand Central Station headed? What hopes and dreams fuel their day? What experiences and responsibilities shape that day? The underpinnings of those answers lie in the study of lifespan development. (credit: modification of work "Grand Central Terminal, Midtown, Manhattan" by Jeffrey Zeldman/Flickr, CC BY 2.0)

CHAPTER OUTLINE

1.1 Psychology and Human Development
1.2 Themes of Development
1.3 Major Theories and Theorists
1.4 Contexts and Settings of Development
1.5 Lifespan Development as a Science: Research Methods

WHAT DOES PSYCHOLOGY SAY? You've been looking forward to your trip to New York City. Upon landing at JFK airport, you take the subway to reach Midtown Manhattan. The train accelerates and you watch the platform disappear as you find a seat and take your first look around the car. There is life here, rocketing through the underground tunnels, and a broad cross-section of human experience. You steal glimpses of your fellow riders' physical appearance, belongings, interactions, and facial expressions. You wonder where each of them is going and what they hope to accomplish today. At each station, the train stops, and some people exit and even more board, the crowd growing as it nears Manhattan.

Like many students studying lifespan development, you likely share a curiosity about the people around you. You may wonder:

- What are the ideal environments for people to develop and flourish in? How and why are these different for different people?
- How straightforward is the path through life's journey? Are there twists and turns, detours, and backtracking?
- What kinds of changes can we typically expect across the lifespan?

- Are there particular points in time during the lifespan where certain experiences are essential to development?
- How does an individual perceive and respond to expectations from their social and cultural environments at different points in their life?
- How much variation should we expect to see—from person to person, group to group, culture to culture—as we attempt to uncover patterns of development across the lifespan?

In this course, you can explore questions like these, contemplate what answers can be found through psychological research, and learn more about your own life journey.

1.1 Psychology and Human Development

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the differences, similarities, and intersections between the fields of psychology, lifespan development, and human development
- Identify major questions of interest and topics of research within the field of lifespan development
- Differentiate between the various domains within the field of lifespan development

Hosea's eighteen-year-old son, Landon, is about to graduate from high school. The family has taken several road trips to visit various colleges around the region, touring each campus and attending a football game with a particular interest in each school's marching band, given Landon's dedication to the trombone. So far, Landon has only expressed interest in two of the schools—both have more than 30,000 students, an exciting campus atmosphere, and large marching bands. Hosea knows his son, though. Landon is quite capable of accomplishing just about anything he sets his sights on, but often needs prodding and a bit of time to get started on a new goal. Hosea worries about the size of the two campus communities. Will Landon get lost among the crowd? Who will keep him on track? And then there's the fact that Landon doesn't know what he wants to study. Hosea also wonders how his own role as a father will change and what the right level of support to provide his son will be. What will he do for a new exercise hobby now that Landon, his best disc golf partner, is moving farther away? All these thoughts flood Hosea's mind as he navigates the morning commute.

Hosea is grappling with various worries and uncertainties related to Landon's impending graduation and transition to college. The study of lifespan development is focused on uncovering the psychological processes behind transitions like this. These processes help us to understand and explain an individual's situation and concerns at a moment in time, as well as in all humans across the entire arc of the lifespan. As we seek to identify those connections and commonalities, we also find differences based on the wide variety of individual experiences, environmental conditions, and cultural backgrounds that make up the varied tapestry of human experience. We begin our journey into lifespan developmental psychology by defining the field, including its scope and relationship to other areas of science, outlining the major questions the discipline is concerned with studying, and previewing the components of an individual's psychological development.

Lifespan Development as a Field of Study

In studying lifespan development, you'll encounter several related scientific areas, often referred to as fields or disciplines, that are sometimes discussed nearly interchangeably. Let's first situate lifespan psychology within the broader science of psychology, and then examine the meanings of the different terms for the field of study.

Psychology

The scientific study of the mind and all the behavior it produces is **psychology**. That is a short and simple definition, but it covers nearly the entire range of human experience. It recognizes that the mind plays a central role in human functioning and is the origin of all behavior and the center of all our responses to our environment.

Our mind, believed to be located within our brain, helps us to both shape and react to the world around us

through our behavior. *Behavior* consists of physical, observable actions—things like riding a bike, cooking dinner, or texting a friend. Behavior is driven by affect and cognition, both of which are not always easily observable. *Affect* is a more precise term for emotional experience, which includes not only our own feelings and moods, but also the ability to discern or understand others' emotional states. *Cognition* is the scientific term describing all of our thinking abilities, such as memory, computation, imagination, and language. If you can think it, feel it, or do it, psychologists study it.

In addition to its broad applicability in studying much of the human condition, psychology is notable for how it bridges previously separate areas of intellectual inquiry. Founded as a scientific discipline in 1879 by Wilhelm Wundt in Germany, psychology was meant to apply the scientific method to the big questions of human experience that philosophers had pondered for thousands of years. For example: "Are humans fundamentally good or bad?" "Do our early life experiences dictate our destiny?" "What is the nature of love?" "Do humans have free will?" and "What is consciousness?"

For nearly 150 years, psychological science has attempted to objectively answer these and thousands of other questions. Along the way, more than a dozen major subfields in psychology have emerged, including clinical, social, cognitive, industrial-organizational, health, and developmental psychology.

Lifespan Development and Human Development

The term **lifespan development** is another name for the subfield of developmental psychology. These terms describe the scientific study of growth, change, and stability in humans and the processes that underlie that growth and change—from conception until death, or colloquially, womb to tomb (Figure 1.2). Growth most often refers to **maturation**, which is typically biological and includes, for example, all the changes in height, weight, and physical characteristics that the transition to adolescence brings. Maturation refers to growth in psychological characteristics as well, like the expansion of vocabulary and social skills that occurs throughout childhood. Lastly, it is important to recognize that change is non-linear and can occur in both directions, whereas stability is characterized by an absence of pronounced change.

FIGURE 1.2 Lifespan development is the study of people from womb to tomb or from cradle to cane. The main idea is that we continue to grow and develop in interesting ways throughout our lifespan, however long that may be. (credit: modification of work "Children and Nature" by Children Nature Network/nappy, CC0 1.0)

Developmental psychologists look for patterns of **stability** and investigate the biological, psychological, and other mechanisms that create stability in our behavior across time. Stability can be further defined as the state in which characteristics and abilities remain the same or function similarly across broad portions of the lifespan. For example, a young child who is shy in social situations may also show signs of social inhibition as a teenager and adult, even making a career choice that allows them to work behind the scenes instead of being

the focus of attention. As you will learn, the concepts of temperament and personality help us understand why the way someone approaches the world often remains consistent across the lifespan.

Closely related to lifespan development, **human development** is a perspective that incorporates a multidisciplinary approach to understanding the development process. In fact, some universities host academic departments separate from the psychology department that focus on human development. The main difference between the two is human development's emphasis on the broad scope of factors that influence development. Specialists in human development often engage with theories, perspectives, and findings from other disciplines such as anthropology, medicine, communications, history, economics, medicine, and law.

The human development perspective helps remind us that human development is complex and is best understood using as many tools, perspectives, and levels of analysis as possible. The contemporary study of human growth, change, and stability across the lifespan has embraced this multidisciplinary perspective, whether it is called lifespan development or human development.

The History of Lifespan Development

Perhaps surprisingly, while lifespan development is a subfield of psychology, scientific and philosophical inquiry into the nature of human development (especially of children) pre-dates psychology's establishment as a formal scientific discipline. The **child study movement**, which united disciplines such as education, social work and public policy to focus the scientific community's interest in child development, arose during the Progressive Era of the 1890s, shortly after psychology's founding (Siege & White, 1982).

However, one of the earliest published scientific accounts of child development had appeared nearly 100 years earlier. This was the work of French physician Jean-Marc Gaspard Itard, who conducted a case study of a boy who had spent his childhood without human contact. The case of Victor, the "Wild Boy of Aveyron" (Itard, 1802, 1821) continues to spark interest more than two centuries later. Through his work with Victor, Itard was able to begin exploring many of the fundamental questions that lifespan development concerns itself with today. So, we can trace the field of lifespan development to at least the start of the nineteenth century in Europe. Older roots lead back to ancient Greece, around 400 BCE. Socrates, Plato, Aristotle, and many other philosophers were fascinated with the same questions that contemporary developmental psychologists study. Today, we are fortunate to have a sophisticated set of science-based tools to help us uncover ever-more-precise answers.

As a scientific field of inquiry, lifespan development asks several fundamental questions, most of which are related to the passage of time. Exploring *what* changes we expect to see, *when* those changes occur during the lifespan, and *how* they come about is of central importance. Lifespan developmentalists are not content with simply describing and explaining human development across the lifespan, however. They want to make that knowledge applicable. Professionals from other fields—including medicine and health care, education, public policy, senior care, social work, the non-profit sector, and even toy design—are also keenly interested in taking theory and research findings from developmental science and using them in everyday life. This highlights the scientific goal of **application**—the process of translating evidence-based research and ideas into practical solutions to influence and improve human life. Developmental psychology, as a scientific discipline, advocates for public policies and interventions to be based on evidence derived from scientific research (Dahl et al., 2018). For example, once developmental science made clear that the reasoning abilities of teenagers, including risk assessment and reward-seeking behavior, are heavily swayed by peers (Steinberg, 2014), public policy agencies around the United States changed driving regulations to explicitly limit the number of non-familial teens who could be present in the car with a teenage driver (Figure 1.3).

FIGURE 1.3 The allure of a text message can override a teen's developing ability to assess danger, a stark reminder of why evidence-based policies, like restrictions on teen passengers, are vital for road safety. (credit: "Texting while driving" by Jason Weaver/Flickr, CC BY 2.0)

IT DEPENDS

Does Money Really Buy Happiness?

Think about the age-old question of whether money can buy happiness (Diener et al. 1993; Diener et al., 2004). At first glance, it seems like it should. If you had enough money, you could purchase the necessities of life, and then some: a nicer home, better means of transportation, or more leisure time or activities. One approach to answering this question is to study the relationship between income and subjective well-being (a personal sense of satisfaction and happiness) in various countries across the globe. Data consistently show that subjective well-being rises with income (e.g., Stevenson & Wolfers, 2013).

At the same time, however, researchers found that above a certain level of income (roughly $90,000 USD per year) the relationship between income and subjective well-being leveled off (D'Ambrosio et al., 2020; Kahneman & Deaton, 2010). That is, a certain amount of money was necessary to satisfy wants and needs, but beyond that, earning more money began to have a diminishing influence.

A recent re-examination of the data looked more closely at this question by classifying participants by their reported level of emotional well-being: those scoring low on emotional well-being were placed in one group, those scoring in the middle in another, and so forth. When examined this way, the findings revealed three main conclusions. First, for those with low reported emotional well-being, there is indeed a steady increase in happiness with increasing income up to about $100,000 per year, and then a leveling off. Second, for those with a reported medium level of emotional well-being, the direct and proportional relationship between happiness and income continued across the entire income spectrum, meaning this group of individuals continued to get ever happier with increasing income. Finally, those individuals with high levels of emotional well-being showed an intensifying relationship between happiness and income after about $100,000 per year. In other words, happiness increased even more when earnings increased (Killingsworth et al., 2023).

Psychologists point out that money is not the only factor related to subjective well-being. Other factors such as self-esteem, strong relationships, social support, and a sense of freedom and optimism play a role (Choi et al., 2023). Throughout this course, you'll explore many of the psychological factors and processes that promote life satisfaction.

Psychological Domains of the Developing Individual

When we think about the myriad sources of influence on an individual's development, we immediately recognize how complex the task of understanding someone truly is. Likewise, the psychological makeup of a person is very complex. Emotional experiences, internal motivations and needs, temperament, personality, and a dozen or more major thinking-skill domains all have developmental pathways, even as they are shaped and influenced by one another. When we add biological growth and maturation, including the unfolding of each person's unique genetic blueprint over time, answering the question, "Why is this person the way they are?" can be daunting.

Psychologists have devised a way to study developing individuals by looking at several major functional areas. These areas of development are biological, cognitive, social, emotional, and personality. This resource is organized along these functional lines by covering each period of the lifespan across two chapters: one chapter focused on biological/physical and cognitive developments, and another chapter focused on social and emotional developments, including the development of personality. Together, the two chapters for each life stage paint a complete picture of developmental psychology's theories and findings. In many instances, a topic, like eating disorders, for example, may be covered in the physical and cognitive discussion, even though there are clear social, emotional, and personality aspects to the development of eating disorders. So, while this separation is useful for organizing our study of lifespan psychology, keep in mind that there are many intersections across areas (Figure 1.4). Note that developmental psychology sometimes refers to social, personality, and emotional topics as "psychosocial" development, to highlight the way these areas overlap with cognition and mental processes.

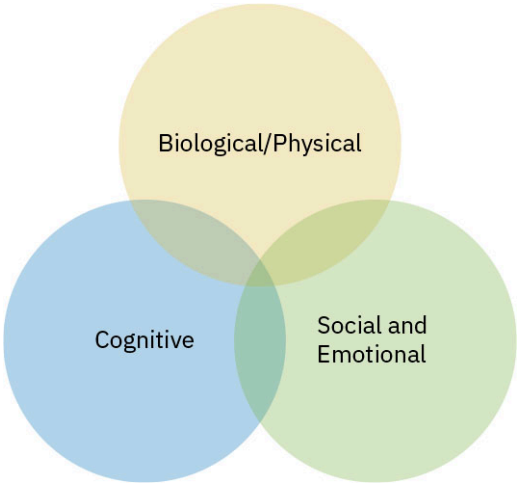


FIGURE 1.4 The overlapping domains of development include an individual's biological/physical, cognitive, and socioemotional processes. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

LINK TO LEARNING

Developed in 1985 by Diener and colleagues, the Satisfaction With Life Scale (SWLS) (https://openstax.org/r/104SWLS) measures an individual's overall life satisfaction. Take this short assessment and follow the instructions for how to score and analyze your results.

References

Choi, Y., Joshanloo, M., Lee, J., Lee, H.-S., Lee, H.-P., & Song, J. (2023). Understanding key predictors of life satisfaction in a nationally representative sample of Koreans. *International Journal of Environmental Research and Public Health, 20*(18), Article 6745. https://doi.org/10.3390/ijerph20186745

Dahl, R. E., Allen, N. B., Wilbrecht, L., & Suleiman, A. B. (2018). Importance of investing in adolescence from a developmental science perspective. *Nature, 554*(7693), 441–450. https://doi.org/10.1038/nature25770

D'Ambrosio, C., Jäntti, M., & Lepinteur, R. (2020). Money and happiness: Income, wealth and subjective well-being. *Social Indicators Research, 148*(1), 47–66. https://doi.org/10.1007/s11205-019-02186-w

Diener, E., & Seligman, M. E. P. (2004). Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest, 5*(1), 1–31. https://doi.org/10.1111/j.0963-7214.2004.00501001.x

Diener, E., Sandvik, E., Seidlitz, L., & Diener, M. (1993). The relationship between income and subjective well-being: Relative or absolute? *Social Indicators Research,*

28(3), 195–223. https://doi.org/10.1007/BF01079018
Itard, J. M. G. (1802). *An historical account of the discovery and education of a savage man, or of the first developments, physical and moral, of the young savage caught in the woods near Aveyron, in the year 1798.* Richard Phillips.
Itard, J. M. G. (1821). *Traité des maladies de l'oreille et de l'audition, Tome premier.* Méquignon-Marvis.
Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*(38), 16489–16493. https://doi.org/10.1073/pnas.1011492107
Killingsworth, M., Kahneman, D., & Mellers, B. (2023). Income and emotional well-being: a conflict resolved. *Proceedings of the National Academy of Sciences, 120*(10), 1–6. https://doi.org/10.1073/pnas.2208661120
Siege, A. & White, S. (1982). The child study movement: early growth and development of the symbolized child. *Advances in Child Development and Behavior, 17,* 233–285. https://doi.org/10.1016/S0065-2407(08)60361-4
Steinberg, L. (2014). *Age of opportunity: Lessons from the new science of adolescence.* Houghton Mifflin Harcourt.
Stevenson, B., & Wolfers, J. (2013). Subjective well-being and income: Is there any evidence of satiation? *American Economic Review, 103*(3), 598–604. https://doi.org/10.1257%2Faer.103.3.598

1.2 Themes of Development

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the difference between continuous and discontinuous development
- Describe nature and nurture as sources for developmental change
- Explain the importance of the timing of opportunities for development

Maya, who is in her late forties, never understood the draw of social media. She put off creating a Facebook account until she found herself missing out on information about her niece's school shared via Facebook groups. Now she finds herself reconnecting with old friends and acquaintances from high school and neighborhoods where she's lived, almost like a virtual reunion. She is fascinated by how people have both changed and stayed the same. Maya's college girlfriend, who swore that she never wanted children, is now a mother of four. But she held to her goal of joining—and eventually running—her family's business. Maya's timid high school classmate took a leap and now lives an adventurous life as a travel writer. But the writer part doesn't surprise Maya at all. She always turned to this friend for support on school papers.

To a developmental psychologist, such a scenario is endlessly fascinating. People often have a natural inclination to wonder about how people from our past turned out. The field of lifespan development has established and advanced several themes and questions to focus this curiosity and exploration. These themes look at the form of, sources for, and timing of developmental experiences and achievements.

Continuous versus Discontinuous Development

The first theme that helps organize the way we think about the nature of development over time is the shape of developmental change (Figure 1.5). Theories about this developmental change are often called stage theories: a **stage theory** attempts to explain why we may observe brief periods of rapid development followed by longer stretches of stability. Stage theories give us an idea about the nature of change as well. Relatively abrupt change is likely to be more apparent and cause us to wonder about its source or mechanism.

When we observe a gradual day-by-day or week-over-week progression of change, we see **continuous development**. Many topics in the field of lifespan development show a continuous pattern of development. For example, vocabulary growth across the toddler and early childhood years shows a dramatic but smooth progression of growth in the number of words a child produces and comprehends (e.g., Pan et al., 2005).

However, early psychological theorists, such as Jean Piaget and Erik Erikson (whose work you'll learn about throughout this course), noted that certain cognitive and personality characteristics seem to develop in intermittent fits and spurts—or stages. For a period of time, the developing individual has one set of capabilities, such as a toddler who communicates in two-word utterances, and then, rather abruptly, a reorganization takes place, and the individual is transformed. Seemingly overnight, that toddler begins speaking in complete sentences. This is **discontinuous development**—a change in developmental kind, form, or degree that does not directly follow from what came before. Some developmental progressions may appear to be discontinuous, such as the sudden changes of puberty. However, when researchers consider the biological changes that prepare a body for the growth spurts of puberty, such as hormone changes, we begin to see that continuous development patterns are also present.

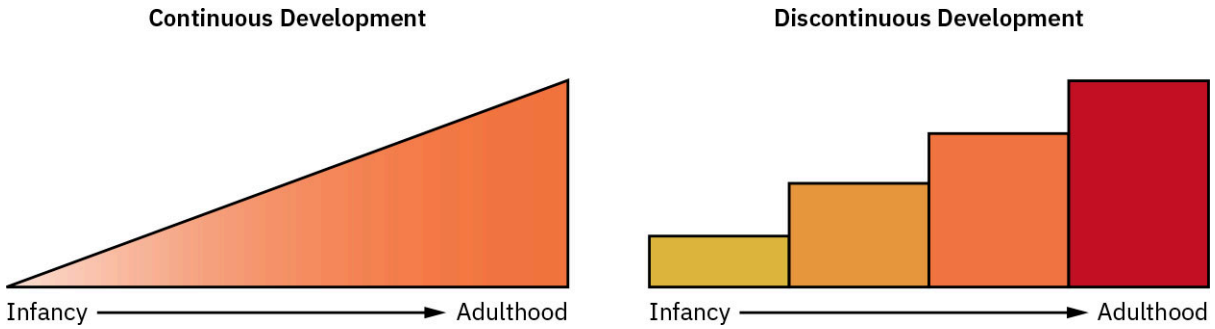


FIGURE 1.5 In contrasting theories, development can be viewed as continuous or discontinuous. Continuous development is conceptualized as a gradual, ongoing process, whereas discontinuous development is marked by distinct, stepped stages. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Whether a characteristic appears to follow a continuous or a discontinuous pattern, an underlying assumption in developmental psychology is the idea that development is progressive and proceeds from basic forms of a characteristic in early life to more advanced forms later. That is, development moves forward. From this perspective, moving backward to an early stage or lower capability, a process termed **regression**, is a sign that something may be wrong. In order to promote early child development, major organizations like the United Nations International Children's Emergency Fund (UNICEF) and the World Health Organization (WHO) have made it a priority to educate caregivers about the importance of psychosocial development (Lucas et al. 2018). For example, poor nutrition can lead to delayed physical growth and poorer long-term health. However, interventions that provide nutrition supplementation in early childhood can help children catch up on physical growth and improve health outcomes (Lucas et al., 2018).

Sources of Developmental Change

We now turn to the theme for which developmental psychology is best known: the relationship between **nature and nurture**. You may also hear this referred to as the nature versus nurture debate (Angoff, 1988). Suppose we observe a developmental change (such as a growth spurt in height) or a state of stability in an individual (such as having a consistent outgoing personality), and their genetic blueprint appears to be the reason for it. In that case, we argue that nature or biological forces are directing the changes or working to keep the characteristics consistent. On the other hand, if the impetus for change seems to come from outside the individual, whether it be a physical or a social aspect of the environment (such as engaging in a new hobby or growing up in a certain family dynamic), then we argue that nurture (the environment) is the reason.

For most physical and psychological characteristics, the source for developmental change or stability is rarely nature or nurture alone. Instead, developmental psychologists focus on the complex and fascinating ways that nature and nurture combine and work together to direct change and stability across the lifespan (Figure 1.6).

FIGURE 1.6 A father and son, side by side, mirror the growth of the trees they walk through. Development and change are influenced by both biological and environmental factors. (credit: "Man in Black Jacket Beside Boy in Pink Jacket Holding Plush Toy during Daytime" by Quaries Official/Quaries.com (https://quaries.com/), CC BY 2.0)

Heritability

Until a few decades ago, the field of psychology often explored the question of what caused developmental change by asking whether it was nature *or* nurture. Due to advances in the discipline's methodologies, findings, and theories, we now think in terms of nature *and* nurture, recognizing that most development has both genetic (nature) and environmental (nurture) influences. In fact, nearly every psychological characteristic is composed of a combination of biological genetic components and environmental influences. The amount of influence from genetics and environment varies depending on the characteristic. Today, psychologists work to discover exactly how much each source contributes. The extent to which the genetic component explains difference is called a **heritability estimate**. A good example of how nature and nurture both contribute is the timing of the onset of puberty. It is determined via the combined influence of nature and nurture, given that both biological determinants (nature) like genes, and environmental elements (nurture) like nutrition, can trigger its emergence.

Closely related to our thinking about the relative contributions of nature and nurture is the concept of **reaction range** (Figure 1.7). This is the idea that our genes likely set upper and lower levels for particular traits, behaviors, and abilities, as well as how sensitive these are to environmental forces. One example to consider is general intelligence (Sternberg, 2012). While scientists have yet to fully identify the specific genes responsible for intelligence, we know it's not solely determined by genetics: environmental factors are of equal importance. However, it's difficult to directly measure the impact of these environmental influences because researchers cannot ethically manipulate a child's upbringing to observe the effects on their intelligence. Although the application of reaction range to intelligence remains largely theoretical, it serves as a useful way to conceptualize the complex interplay of genetics and environment in human development. It reminds us that both nature and nurture contribute to who we become.

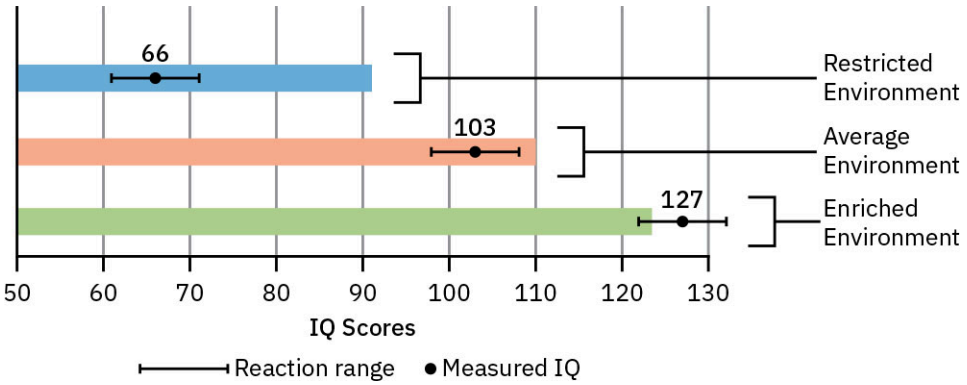


FIGURE 1.7 Although how the contributing factors combine in complex ways not fully understood, researchers agree that both genes and environment play roles in the development of intelligence. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Gene-Environment Correlations

Another way developmental psychologists try to discern the relative contributions of genetic and environmental influences is **gene-environment correlation**. Gene-environment correlation describes the complex interplay between our genes and the environments we experience (Price & Jaffee, 2008), and encompasses three main types: passive, evocative, and active.

- The passive type occurs when a child inherits genes from their parents that influence the environment in which they are raised. For example, parents who enjoy reading are more likely to read to their children regularly and have many books in the house.
- The evocative type explains how our genetically influenced behaviors can evoke reactions in others, shaping our environment in turn. For example, parents are more likely to take their child to the library if they notice the child enjoys reading.
- The active type refers to how our genetic tendencies guide us to select specific environments. For example, a child joins a book reading club at school because they have a passion for reading.

Studies of twins and adopted children have shown that our genes play a role in shaping the environments we experience, highlighting that what seems like environmental influence may actually be partly due to our genetic makeup.

Epigenetics

A breakthrough concept over the past few decades called epigenetics also explores the complexity of the nature and nurture question, as well as the level of sophistication in our current thinking about how best to answer it. The process of **epigenetics** explains how an individual's behaviors and environment can cause changes that affect the way their genes work. (Smeeth et al., 2021). Biologists, neuroscientists, and psychologists alike now recognize that environmental influences can modify an individual's genetic expression. There is evidence that stressful environments can trigger a chemical tagging of someone's DNA. For example, trauma experienced in childhood (like growing up in a highly stressful home environment, violence-ridden neighborhood, or a war zone) could make someone sensitized to and highly reactive to signs of conflict later in life (Gladish et al., 2022; Ramo-Fernández et al., 2015). More specifically, the genes responsible for building the brain systems that regulate our stress level could be altered. The nature and nurture question is as fascinating to explore as it is complex to answer, and it underlies just about every topic of inquiry studied by lifespan psychologists.

LINK TO LEARNING

This TEDEd talk on epigenetics with Carlos Guerrero-Bosagna (https://openstax.org/r/104Epigentics) explains that beyond nature and nurture, we can learn a lot from research into how genes can be altered by

environmental influences.

Windows of Opportunity for Development

In addition to studying what changes are expected and how they occur, developmental psychologists ask when we should expect certain skills to develop, and whether there are windows of opportunity for these that affect developmental outcomes. Is it possible to speed up development if we introduce an experience at just the right time? Is it possible to hinder or even prevent the development of a particular ability or characteristic altogether, such as speech? What are the impacts of highly enriching environments? What are the impacts of being deprived of certain experiences, such as human contact?

Scientists have learned that across nearly all psychological characteristics, humans are highly adaptable. They observe **normative** developmental outcomes, meaning those that are typical or expected, across a wide range of environmental conditions. Certainly, there are optimal environments for these developmental outcomes, but good outcomes occur even in suboptimal circumstances. This is central to **resilience**, an individual's capacity for and "process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress" (American Psychological Association [APA], 2014). It takes extreme deprivation to severely restrict a developing human's potential, as well as such deprivation occurring at specific developmental times. In other words, resilience is common and lifespan development principles can be applied to increase the likelihood of resilience.

A **critical period** is the developmental age range in which certain experiences are required for a psychological or physical ability to develop (Colombo et al., 2019). For example, it appears that exposure to human speech is necessary in the early years of life for typical language development. Consider the 1970s case of Genie, a child who was severely neglected and isolated to the point that she was rarely spoken to. Upon her rescue at age thirteen years, Genie faced the monumental task of learning a language (a primary task of infants and toddlers) with an adolescent (post-pubescent) brain (Jones, 1995). Genie became the subject of intense study and remediation efforts by doctors, speech pathologists, and psychologists (Fromkin et al., 1974). Despite her extreme early deprivation, she made many improvements in language comprehension and speech production. However, her development of language differed markedly from what is normative. For example, language production and comprehension happen in the left hemisphere of the brain for the vast majority of humans, but Genie showed processing of language in her right cerebral hemisphere.

LINK TO LEARNING

This concise video describes Genie's case and includes archival footage (https://openstax.org/r/104GeniesCase) about her story. Extensive attempts for rehabilitation and intense study by linguists, medical doctors, and psychologists added to the body of knowledge about language learning and the effects of long-term child neglect and maltreatment.

A **sensitive period** describes an age range during which the development of a characteristic is particularly amenable to inputs and influences from the environment (Colombo et al., 2019). For a critical period, certain experiences are necessary for normal development, whereas having certain experiences during a sensitive period makes an advantageous situation for ideal development (Pascalis, 2020). For example, a sports coach would want to know about normative periods for growth spurts in males and females, especially the typically wide variation around puberty. Not only could this awareness of timing help with training young athletes, but it could inform injury prevention practices. A faith-based youth leader working closely with a group of teenagers would want to understand that the adolescent period is a time of identity exploration and desire to fit in with peers, and plan activities accordingly. A social worker employed by an assisted living facility knows that residents might be concerned with life review and may develop a scrapbooking activity to support the process of reflection. Physical development, identity exploration, and reflections on past life can occur across the

entire lifespan. What's notable across these three examples is that each takes on more importance at a different stage in life, when the opportunities for impact on development are greatest. That is the concept of the sensitive period.

Variability and Diversity of Development

In this course, you'll learn about numerous theories, topics, and research findings based on the developmental experiences of many thousands of people. It is sometimes easy to confuse or conflate the broad results of studies with individual life histories. Scientific ideas about development represent statistical averages for developmental outcomes across many individuals. But every individual is unique and has their own life history—one that may show varying degrees of similarity to and deviation from the findings presented as normative in this discipline.

For example, when you learn that two-word utterances typically appear around eighteen months, a reader might recall, "Well, my child did this when they were twelve months old." The fact that this individual's development doesn't perfectly fit the finding doesn't invalidate the overall research. What's more important is the pattern or sequence from one-word utterances to two, and that this development occurs within a typical timeframe, the midpoint of thousands of examples with a range of variations on either side. So, while lifespan psychology attempts to uncover what is typical for all humans, psychologists recognize and allow for the inherent variability of a single individual's development.

Variability in development can also occur on a cultural level. For example, research compared Dutch and Israeli parents and found cultural differences in how they promote their babies' motor development (Oudgenoeg-Paz et al., 2020). Israeli parents encouraged more tummy time, believing it helps babies develop faster. Dutch parents were not as likely to encourage their infants spend time laying on their tummies. Interestingly, the Israeli babies who got more tummy time and stimulation from their parents showed better crawling skills than the Dutch babies. This study highlights that different cultures have different approaches to parenting, and these choices can influence how babies develop.

References

American Psychological Association. (2024). *Resilience*. https://www.apa.org/topics/resilience

Angoff, W. H. (1988). The nature-nurture debate, aptitudes, and group differences. *American Psychologist, 43*(9), 713–720. https://doi.org/10.1037/0003-066X.43.9.713

Colombo, J. Gustafson, K. M., & Carlson, S. E. (2019). Critical and sensitive periods in development and nutrition [Supplemental material]. *Annals of Nutrition and Metabolism, 75*(1), 34–42. https://doi.org/10.1159/000508053

Fromkin, V., Krashen, S., Curtiss, S., Rigler, D., & Rigler, M. (1974). The development of language in Genie: A case of language acquisition beyond the "critical period." *Brain and Language, 1*(1), 81–107. https://doi.org/10.1016/0093-934X(74)90027-3

Gladish, N., Merrill, S. M., & Kobor, M. S. (2022). Childhood trauma and epigenetics: State of the science and future. *Current Environmental Health Reports, 9*(4), 661–672. https://doi.org/10.1007/s40572-022-00381-5

Jaffe, A. E., Straub, R.E., Shin, J. H., Tao, R., Gao, Y., Collado-Torres, L., Kam-Thong, T., Xi, H. S., Quan, J., Chen, Q., Colantuoni, C., Ulrich, W. S., Maher, B. J., Deep-Soboslay, A., The BrainSeq Consortium, Cross, A. J., Brandon, N. J., Leek, J. T., Hyde, T. M., Kleinman, J. E., & Weinberger, D. R. (2018). Developmental and genetic regulation of the human cortex transcriptome illuminate schizophrenia pathogenesis. *Nature Neuroscience, 21*, 1117–1125. https://doi.org/10.1038/s41593-018-0197-y

Jones, P.E., (1995). Contradictions and unanswered questions in the Genie case: A fresh look at the linguistic evidence. *Language & Communication, 15*(3), 261–280. https://doi.org/10.1016/0271-5309(95)00007-D

Lucas, J. E., Richter, L. M., & Daelmans, B. (2018). Care for Child Development: an intervention in support of responsive caregiving and early child development. *Child: Care, health and development, 44*(1), 41–49. https://doi.org/10.1111/cch.12544

Oudgenoeg-Paz, O., Atun-Einy, O., & van Schaik, S. D. M. (2020). Two cultural models on infant motor development: Middle class parents in Israel and the Netherlands. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.00119

Pan, B. A., Rowe, M. L., Singer, J. D., & Snow, C. E. (2005). Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Development, 76*(4), 763–782. https://doi.org/10.1111/1467-8624.00498-i1

Pascalis, O., Fort, M., & Quinn, P. C. (2020). Development of face processing: Are there critical or sensitive periods? *Current Opinion in Behavioral Sciences, 36*, 7–12. https://doi.org/10.1016/j.cobeha.2020.05.005

Price, T. S., & Jaffee, S. R. (2008). Effects of the family environment: gene-environment interaction and passive gene-environment correlation. *Developmental Psychology, 44*(2), 305. https://doi.org/10.1037/0012-1649.44.2.305

Ramo-Fernández, L., Schneider, A., Wilker, S., & Kolassa, I. T. (2015). Epigenetic alterations associated with war trauma and childhood maltreatment. *Behavioral Sciences & the Law, 33*(5), 701–721. https://doi.org/10.1002/bsl.2200

Smeeth, D., Beck, S., Karam, E. G., & Pluess, M. (2021). The role of epigenetics in psychological resilience. *Lancet Psychiatry, 8*(7), 620–629. https://doi.org/10.1016/s2215-0366(20)30515-0

Sternberg, R. (2012). Intelligence. *WIREs Cognitive Science, 3*(4), 501–511. https://doi.org/10.1002/wcs.1193

1.3 Major Theories and Theorists

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the major theoretical perspectives of lifespan development
- Connect each theoretical perspective with the themes of lifespan development
- List the similarities and differences among the major theoretical perspectives
- Provide examples of developmental concepts present in the lifespan

Shanae is in her late twenties and is several years into her career as a marketing consultant for a communications company. She finds life busy and fulfilling, and enjoys both the challenge of her job and the new city she lives in. However, she is concerned about her childhood friend, Georgia. Georgia visited Shanae last weekend and the two went out to several dance clubs to meet up with some of Shanae's new friends. Amid all the fun, Georgia confided in Shanae that she wasn't happy with her current job, didn't know what career path she should pursue, and that her last relationship ended poorly. Sad and confused, Georgia seemed directionless and asked Shanae to give her advice. Shanae wants to help her friend but doesn't know where to begin.

All human beings are complex. As individuals, we are collections of thousands of traits, capabilities, roles, relationships, and behavioral tendencies. Each of those characteristics grows, changes, or shows remarkable stability over the course of a lifetime. And the developmental trajectory of each characteristic is itself influenced by dozens or even hundreds of genes, experiences, and gene-environment interactions. In short, humans are multidimensional and impacted by a multitude of influences. Because of this complexity, lifespan development employs many theoretical perspectives and relies on research methodologies from multiple scientific disciplines. This multi-perspective, multidisciplinary approach aims to give us a full and accurate understanding of human functioning.

As you learn about some of the major theoretical perspectives or frameworks for understanding human behavior throughout the lifespan, there will be different perspectives to explain development and behavior. Instead of seeing these as contradicting each other, these varied perspectives can be considered together to enhance our understanding of how human behavior evolves over the lifespan. Even when two theories may seem diametrically opposed, there are often ways that they can be seen as complementary explanations of different areas of development.

Psychosocial Theory of Development

Erik Erikson (Figure 1.8) was born in Germany in the early twentieth century and became a teacher and psychoanalyst. He worked with psychoanalyst Anna Freud as each practiced and strove to further Sigmund Freud's foundational theory of psychosexual development, which outlined a series of stages that children navigate in their personality development. When World War II approached, Erikson moved to the United States and spent time living with the Sioux in South Dakota. As a result of his training in psychoanalysis and his cultural experiences, he proposed a highly influential update to Sigmund Freud's theory.

FIGURE 1.8 Erik Erikson proposed the psychosocial theory of development. In each stage of Erikson's theory, there is a psychosocial task that we must master in order to feel a sense of competence. (credit: "Erik Erikson" by WP Clipart/Wikimedia Commons, Public Domain)

Erikson called this a **psychosocial theory of development**, which views human development as occurring in a discontinuous or stage-like fashion as we resolve increasingly complex and age-graded challenges posed by the social environment. The theory highlights the way the developing mind (the "psyche") is embedded within society (the "social" part of the theory's name), with an intricate back-and-forth between the changing demands and expectations of society and the mind's responsive transformation.

Erikson's theory was the first to consider the entire lifespan. The eight stages of life he outlined (Erikson, 1950, 1963) now form one of the organizing frameworks for the study of lifespan development. In Erikson's view, as an individual enters each successive period of the lifespan, society presents a new challenge, called a **psychosocial crisis**, for the developing individual to work on (Table 1.1). For example, a toddler (aged one to three years) is learning to operate independently, which allows them physical independence from their caregivers. Successfully mastering this crisis results in the toddler having autonomy. Society, as represented by parents and other caregivers, has a vested interest in keeping the child safe during this early phase of life. Erikson called this struggle or tension between the child and society's expectations the "autonomy versus shame/doubt" stage. The child spends eighteen to twenty-four months working to gain a basic sense of self-control while negotiating this achievement with their caregivers. In this way, Erikson proposed that personality development is an interactive process between an individual and society. Each stage affords the opportunity to achieve another level of psychosocial mastery, beginning with trust in our first year and culminating in a sense of integrity.

Stage	Age (years)	Developmental Task	Description	Successful Mastery
1	0–1	Trust versus Mistrust	Trust (or mistrust) that basic needs, such as nourishment and affection, will be met	Trust
2	1–3	Autonomy versus Shame/Doubt	Develop a sense of independence in many tasks	Autonomy

TABLE 1.1 Erikson's Psychosocial Stages of Development (source: Erikson, 1950, 1963)

Stage	Age (years)	Developmental Task	Description	Successful Mastery
3	3–6	Initiative versus Guilt	Take initiative on some activities—may develop guilt when unsuccessful or boundaries overstepped	Initiative
4	7–11	Industry versus Inferiority	Develop self-confidence in abilities when competent or sense of inferiority when not	Industry
5	12–18	Identity versus Confusion	Experiment with and develop identity and roles	Identity
6	19–29	Intimacy versus Isolation	Establish intimacy and relationships with others	Intimacy
7	30–64	Generativity versus Stagnation	Contribute to society and be part of a family	Generativity
8	65+	Integrity versus Despair	Assess and make sense of life and meaning of contributions	Integrity

TABLE 1.1 Erikson's Psychosocial Stages of Development (source: Erikson, 1950, 1963)

Cognitive Perspectives

The cognitive perspective in developmental psychology emphasizes the study of mental processes and how they change over time. Key figures in this area include Jean Piaget, known for the stage theory of cognitive development; Lev Vygotsky, who emphasized the role of social interaction in cognitive development; and information processing theorists who examine how the mind processes information like a computer.

Stage Theory of Cognitive Development

Swiss biologist Jean Piaget is famous for contributing theories regarding changes in cognitive ability that occur as we move from infancy to adulthood. He spent his early years as a scientist studying various animals. He then worked on creating some of the earliest measures of intelligence. As he was writing test items, he interviewed children and asked them to explain the thought process behind their answers to sample questions. One of Piaget's early insights was to focus on the children's incorrect answers because they provided a window into their reasoning abilities. From these observations, he developed his prominent **stage theory of cognitive development** (Piaget, 1952, 1954). Piaget's theory, like Erikson's, is an organizing framework for the modern study of lifespan development.

Piaget's theory views development as occurring through a series of age-based stages (Table 1.2). As we age and our brain and bodily systems mature, we are afforded new ways of interacting with the world. The combination of these new physical and sensory capabilities with the new experiences the environment offers drives the development of thinking abilities that are acquired across the first twenty years or so of life. Along the way, individuals are active participants in their own development, testing out ideas and capabilities in the world and formulating a coherent sense of how the world works. Piaget's emphasis on the active nature of learning and development, his focus on the reasoning behind wrong answers, and his delineation of the psychological processes occurring in cognitive development made for a groundbreaking theory.

Age (years)	Stage	Description	Developmental Issues
0–2	Sensorimotor	World experienced through senses and actions	Object permanence Stranger anxiety
2–6	Preoperational	Use words and images to represent things, but lack logical reasoning	Pretend play Egocentrism Language development
7–11	Concrete operational	Understand concrete events and analogies logically; perform arithmetical operations	Conservations Mathematical transformations
12+	Formal operational	Formal operations Utilize abstract reasoning	Abstract logic Moral reasoning

TABLE 1.2 Piaget's Stages of Cognitive Development (source: Piaget, 1952, 1954)

Sociocultural Theory of Cognitive Development

Russian psychologist Lev Vygotsky explored learning and cognitive development in children during the early twentieth century, and demonstrated how important social interaction is for learning and growing. He died in his thirties and his work did not become widely known outside Russia until the 1970s, when his theory became very influential in the field of developmental psychology.

Vygotsky (1978, 1998) proposed a **sociocultural theory of cognitive development**, emphasizing that thinking abilities are embedded within an individual's social and cultural context. Whereas Piaget's theory focused on a person's step-like journey of coming to understand the world, Vygotsky saw cognitive development as supported and propelled by social tools available to the individual learner. These social tools include language, direct support from others, and technological aids. Vygotsky, then, was among the first to recognize that language guides cognition and gives shape to ideas that can be readily communicated with others through words. One such example is **private speech**, whereby the learner may use words to audibly (or not) keep themselves on track during a difficult problem-solving session. If you've ever rehearsed a list of grocery items out loud while you searched for a place to record them, you've used language in such a way. Acronyms for remembering complex math concepts, such as PEMDAS (parentheses, exponents, multiplication, division, addition, and subtraction) for the order of arithmetic operations, are another example of language use supporting cognition.

LINK TO LEARNING

Being caught talking to yourself can feel embarrassing, but it is normal to do so. Most people talk to themselves throughout a typical day. View this TED talk about the psychological benefits of positive self-talk (https://openstax.org/r/104PositiveTalk) to learn more about why we do this and the impact of what we say to ourselves.

The application of various forms of technology, another social tool, can allow an individual to perform complex tasks more easily than by relying on brain power alone. From this perspective, using a calculator to do basic calculations frees up the mind to think about the more important and complex parts of a word problem, for example. Word processing programs and apps that autocorrect spelling and grammar support thinking by allowing the writer to focus on the ideas of their message, instead of on the mechanics of writing.

Vygotsky is best known for championing social supports in propelling cognitive development and educational achievement. His notion of the **zone of proximal development (ZPD)** states that all of us are capable of thinking and achieving at a higher level than we may realize: there are concepts and ideas just beyond our current abilities that we are ready to master if only we have a little help, often from others. Educators and parents have used the idea of **scaffolding** to help learners achieve beyond their current level, gradually withdrawing support as the student becomes more competent. Learning how to ride a bicycle is a great example of scaffolding. Support for learning this difficult task can come through training wheels, or from a caregiver holding the bicycle seat while running alongside the child. As the child gains a sense of balance and masters the mechanics of pedaling and steering, the training wheels become less necessary and are eventually removed, and the caregiver lets go of the seat. The child has reached a new level of development with guided and temporary support.

Information Processing Theory

Our digital age has also brought new ways of thinking about how the human brain works. Although the computer was conceptualized via ideas about how the human brain functions, psychologists now use the functioning of a computer as a metaphor for understanding how we think.

From the 1960s onward, the metaphor of information processing has been a helpful way to think about cognition and cognitive development (Atkinson & Schriffrin, 1968). One key concept is that of information flowing into the brain, being processed or acted on, and then leaving the brain in the form of behavioral output, just like data in a computer. This concept also relies on a modular view of the brain: the idea that discrete structures within our brain specialize in various cognitive tasks, such as memory, sensory processing, language comprehension, and spatial reasoning. As information flows into the brain through various senses, it is routed to the appropriate brain region and acted on, and then behaviors emerge through actions and words. From a developmental perspective, cognitive development is fostered as the various parts of this information processing system mature and gain operational efficiency.

While the information processing model is useful, it has also become more simplistic as science has progressed. Our brain indeed has many functional modules that are connected and share information back and forth. The advent of brain imaging technology brought insight into further complexities of how the brain and its cognitive abilities are organized.

Cognitive Neuroscience

Advancement in computing technology ushered in increasingly sophisticated ways to image, or view, the brain. At first, technologies such as x-rays and CT-scans (computed tomography scan) were used to make images of brain structures. Often, researchers would correlate brain injury and loss of functionality with changes seen in these images. The invention of MRI (magnetic resonance imaging) scanning made highly detailed imaging possible. Finally, an innovative software development allowed many such images to be made quickly and spliced together into a real-time video of the brain at work. This technique is called fMRI (or functional magnetic resonance imaging.)

Together, these are imaging tools that psychologists working in cognitive neuroscience use to connect brain structure and function with behavior. Scientists can now see which areas of the brain become more active when participants solve math problems, think about a romantic partner, or perform a memory recall task, among many other fascinating findings (Figure 1.9). Periodic brain scans allow researchers to observe the effects of learning and mastering a challenging task over time, and to look for changes in connectivity among various brain regions as individual's age. The Dallas Lifespan Brain Study (DLBS) is an example of the advances made by using these technologies to think about the aging brain. For example, contrary to the expectation that brain changes and symptoms of Alzheimer's disease and other forms of dementia begin in late adulthood, research from DLBS has shown a steady relation between changes in the brain and a decline in cognitive function beginning much earlier in adulthood (Smith et al., 2023). This provides hope for advancements in the

identification, prevention, and treatment of these diseases.

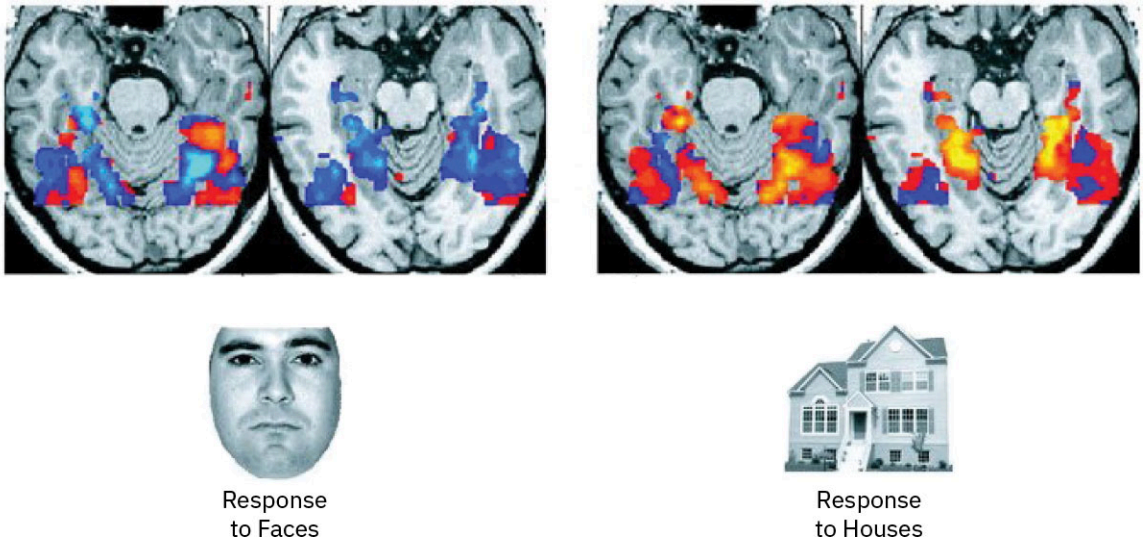


FIGURE 1.9 Psychologists use fMRI (functional magnetic resonance imaging) to learn more about which areas of the brain respond to different stimuli. (credit: modification of work "Haxby2001" by US Department of Health and Human Services: National Institute of Mental Health/Wikimedia Commons, Public Domain)

Biological and Evolutionary Perspectives

It can be difficult to distinguish between fields that study the interaction of genes and the environment, such as the fields of evolutionary psychology and behavioral genetics. In both fields, it is understood that genes not only code for particular traits, but also contribute to certain patterns of cognition and behavior. Evolutionary psychology focuses on how universal patterns of behavior and cognitive processes have evolved over time, whereas behavioral geneticists study how individual differences arise, in the present, through the interaction of genes and the environment. When studying human behavior, behavioral geneticists often employ twin and adoption studies to research to help provide insight into the relative importance of genes and environment for the expression of a given trait.

Many of the most influential early psychologists and developmental theorists were medical practitioners or had some form of training in biology. It is no surprise, then, that various biological principles and methodologies have come to play a prominent role in thinking about human development, including evolutionary factors, behavioral genetics, and ethology.

Ethology

The study of animal behavior is called **ethology**. Developmental psychologists who use this approach study animals, especially other mammals, as models to discover and test ideas relevant to understanding human functioning. In 1930s England, John Bowlby used his medical and psychoanalytic training to research the experience of children growing up in orphanages and similar institutions. Even though these children had all the physical necessities for health—clothing, shelter, and food—he was concerned by the emotional and social effects he observed. Using these observations and his findings from animal studies, including rodents and monkeys, Bowlby formed the theory of **attachment**, an enduring, emotionally significant bond that forms between two individuals, often in a caregiving context (Bowlby, 1951). The development of at least one attachment, the basis of human bonding, is essential to human development. Bowlby's discovery of this necessary component for human flourishing opened a new area of developmental inquiry with far-ranging consequences for individuals across the entire lifespan.

IT DEPENDS

How Does Attachment in Childhood Carry across the Lifespan?

You've likely heard that what happens in childhood has lifelong consequences. In many ways, the field of lifespan development can be proud of the pervasiveness of this idea in that it can help to focus attention, priority, and care on child development. Of course, this idea does not mean that childhood experiences define our destiny or that experiences later in life do not matter as much in comparison.

Attachment is the enduring bond that develops between child and caregiver. The quality of this bond depends on the pattern of interactions between these individuals. How sensitive has the caregiver been to the child's physical and psychological needs? How responsive has the caregiver been in addressing those needs? And finally, how consistently has there been a match between this sensitivity and responsiveness? When there is a history of consistent, sensitive, and responsive caregiving, a secure attachment develops. If one or more of those dynamics is missing, various forms of insecure attachment may develop. The functional purpose of this enduring attachment bond is not just the emotional and physical support that comes with being nurtured, but also a sense of security that allows the child to venture forth into the world and explore. This exploration supports other aspects of human development including cognitive, social, and personality domains.

The quality of the early attachment bond carries forward to future significant relationships. A child's expectations of what a relationship is, what it is for, and how others will behave toward them are informed by that first attachment bond. The impact of stability of attachment across the lifespan has been well-documented. For example, attachment quality predicts how far of a distance a young adult is comfortable traveling to attend college (secure attachment predicts the ability to move farther away from home), as well as academic success once at college, with a more secure attachment history predicting better academic success (Kurland et al., 2020). Attachment quality also has connections to later life stages, such as when the now-adult child becomes the caregiver for an elderly parent. A secure attachment history is related to an increased desire to care for the elderly and the amount and quality of caregiving provided (Karantzas et al., 2019).

Despite these findings suggesting remarkable stability across the lifespan, a central feature of attachment theory is the ability for an insecurely attached individual to re-approach attachment quality by forming a significant relationship with a securely attached person at any time in life. That is, a person with a secure attachment history can provide a model for an insecurely attached person to emulate, thereby changing that person from that point forward (Ainsworth et al., 1979; Hazan & Shaver, 1987).

So, do childhood experiences lead to lifelong consequences? Indeed they do, but humans have a remarkable capacity for change, growth, re-learning, and development, as shown through the example of attachment theory.

Evolutionary Psychology

The approach of **evolutionary psychology** looks to the theory of natural selection to explain the emergence, development, and persistence of various psychological characteristics in humans. Natural selection posits that long-ago environmental conditions favored those with certain physical and psychological characteristics making them more likely to survive and be able to reproduce. These individuals could then pass on their genes, coded for those characteristics, to their offspring. Across many generations, the characteristics that conferred such a survival advantage became part of the species' genetic package. Examples of human functioning that have been studied from an evolutionary perspective include aggression and prosocial (helping) behavior, mating preferences, attachment, wisdom, the timing of puberty, and sleep patterns, among many others.

Behavioral Genetics

The field of inquiry that most directly explores the intersection between nature and nurture is called

behavioral genetics. Research in this area helps to explain how much variation in a psychological characteristic is due to genetic differences among individuals, which will shape the kinds of interventions and other applications science can offer.

To measure the heritability estimate for a given psychological characteristic, researchers frequently use a **kinship study**, which examines how genetic and environmental similarities between individuals relate to differences in their traits or behaviors. In **twin studies**, a type of kinship study, the correspondence between the genetic relatedness of twins specifically (both identical and fraternal) and resulting psychological characteristics are examined (Figure 1.10).

FIGURE 1.10 Studying twins helps researchers learn more about how genetics and environment influence various aspects of psychological development. (credit: "Twins" by Shannon Miner/Flickr, CC BY 4.0)

Kinship studies allow psychologists to take advantage of naturally occurring variations in the genetic similarities among individuals and compare that information with what we know about the degree of similarity or dissimilarity in the same individuals' environments. For example, we know that identical twins who grow up together share close to 100 percent of their genes but also have a high degree of overlap in their upbringing. Fraternal twins, like any non-identical set of siblings, share approximately 50 percent of their genes, and have considerably more environmental overlap than non-twin typical siblings who may be born years apart and grow up in different stages or versions of the same household. Studies that observe family members in these contexts allow scientists to discern the relative contributions of genes and environment to the development of psychological characteristics.

Behaviorist Perspectives

For much of psychology's early history as a scientific discipline, the **behaviorist perspective** dominated thinking about how an individual's characteristics develop and change over time. This perspective, also known as learning theory, focuses on an environment's role in influencing behavior and behavioral change. When we think of language development, for instance, it is easy to be amazed by the rapid rate of growth in a child's vocabulary size, complexity of sentences, and skill in communication. It may seem that language development happens suddenly and naturally. Upon further examination, however, and with using the learning theories that make up the behaviorist perspective, we can see a tremendous amount of environmental influence working to build and shape the child's acquisition of language. Foundational research into these areas includes the development of theories about classical conditioning, operant conditioning, and observational learning.

Classical Conditioning

Early in psychology's history as a science, Russian physiologist Ivan Pavlov accidentally uncovered the

principles that came to be known as classical conditioning. While studying the digestive system of dogs, Pavlov noticed that his experimental subjects, dogs, would often salivate even when he hadn't produced the meat powder that was meant to trigger their salivation. The dogs had come to associate the sound of a bell, which signaled the start of each experimental trial, with impending food, and thus they would salivate when they heard the bell, even without the meat powder. Pavlov became curious about this and soon discovered the principles of classical conditioning.

In classical conditioning, a neutral or meaningless stimulus, in the case of Pavlov's dogs the sound of the bell, takes on the same meaning for the learner as the natural stimulus with which it is accidentally or intentionally paired, in this case the meat powder. As a result, the previously neutral stimulus then produces the same behavioral outcome as the natural stimulus. The natural stimulus, which has inherent meaning like the smell of food, is called an **unconditioned stimulus**, while the once-neutral trigger is called a **conditioned stimulus** because the learner has become conditioned to respond to it (Figure 1.11).

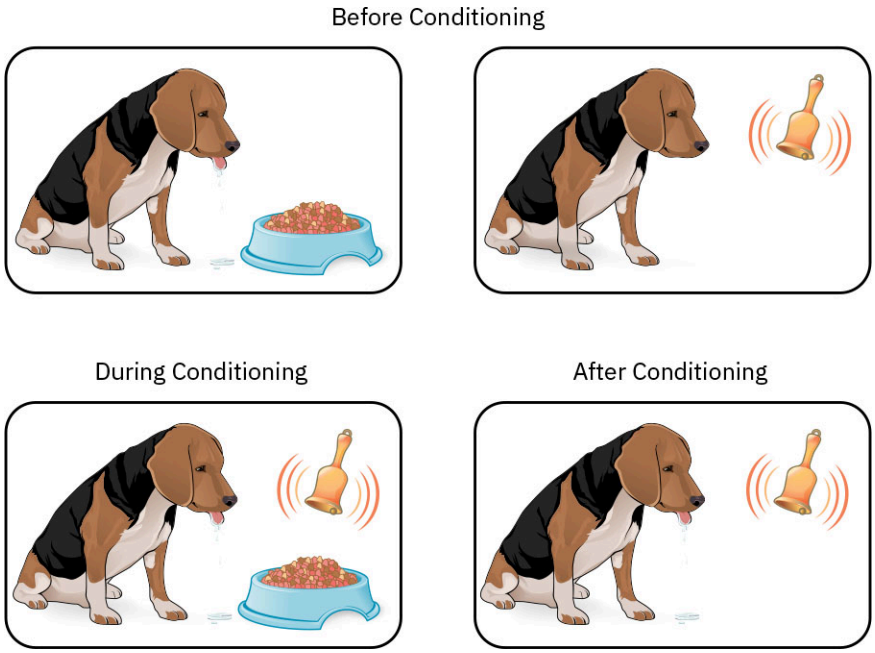


FIGURE 1.11 In classical conditioning, food initially triggers salivation, while a bell does not. After repeatedly pairing the bell with food, the bell alone triggers salivation. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

This type of learning is a form of **associative learning**, in which the repeated presentation of two stimuli results in linking them, making their meanings synonymous. A language learner's vocabulary can be built this way (Smith & Yu, 2008). For example, a toddler is presented with an apple and at the same time hears the word "apple." It doesn't take many repetitions before the child associates the object apple with the word label "apple."

Operant Conditioning

B.F. Skinner uncovered fundamental principles of learning theory in the early twentieth century (Skinner, 1938, 1961). Skinner's studies built on Thorndike's *law of effect*—the philosophical idea that the consequences of an action tend to alter the frequency of the action (Thorndike, 1911). From this came the understanding of **operant conditioning**, the theory of learning that outlines how feedback from the environment shapes an individual's behavior. Essentially, Skinner's theory explains how behaviors are strengthened or weakened according to their consequences.

According to Skinner's operant conditioning theory, learning starts with an individual performing a behavior. The environment can then provide encouraging feedback called **reinforcement**, discouraging feedback in the

form of **punishment**, or a neutral response, including ignoring the behavior. Given positive or negative feedback, the individual learns the value of the behavior and typically modifies its frequency. The practice of **shaping** gradually builds complex behaviors by rewarding actions that get closer and closer to the desired outcome.

For example, in the case of language development, when a caregiver holds up an apple and a toddler says "appah," the caregiver may exclaim excitedly, "Yes! An apple!" The next week, though, the caregiver might respond with less enthusiasm and instead repeat, "Apple . . . aaa-pulll." Only when the child responds with the more accurate "ahpul" would the caregiver give the same enthusiastic praise as before. In this way, speech can be built and shaped over time. Notice the role of rich and varied environmental feedback in producing this type of learning.

LINK TO LEARNING

This TEDEd talk comparing classical conditioning and operant conditioning (https://openstax.org/r/104ClassCondit) helps distinguish between these two modes of learning.

Observational Learning

Albert Bandura studied the principles of **observational learning** that explain how learning can occur through the social act of observing others who are themselves learning (Bandura, 1961). Among Bandura's contributions are two noteworthy insights to our understanding of human development and learning. First, his work recognized that humans are social animals: we live, learn, and develop within the presence of others, and we are influenced by and influence one another. Second, he demonstrated that the processes of classical conditioning and operant conditioning can guide learning: when we observe others' actions and the consequences of those actions, we learn too. This indirect or vicarious learning through others is common in today's media-saturated environment, where we are exposed to the actions and learning of others through our computer screens, smartphones, and televisions (Figure 1.12). Long-running educational television shows like *Sesame Street* and *Dora the Explorer* provide abundant opportunities for a child viewer to learn language, for instance, by observing others' language learning.

(a) (b)

FIGURE 1.12 Learning by viewing others can be powerful. (a) Yoga students learn by observation as their instructor demonstrates the correct stance and movement for students (live model). (b) Models do not have to be physically present for learning to occur, however. Through symbolic modeling, this child can learn a behavior by watching someone demonstrate it on video. (credit a: modification of work "Yoga Class with Ki Steelman" by Tony Cecala/Flickr, CC BY 2.0; credit b: modification of work by Andrew Hyde)

LINK TO LEARNING

The original Bobo doll study by Albert Bandura (https://openstax.org/r/bobodoll) demonstrates how children

who are already frustrated may be more likely to model aggressive behaviors they observed from adults.

The theories and principles that together make up the behaviorist perspective offer a powerful set of explanations for the development of complex behaviors, capabilities, and characteristics, such as language and personality, especially in response to environmental feedback.

INTERSECTIONS AND CONTEXTS

Developmental Assets Approach

In thinking about lifespan development, what specific developmental outcomes should we seek to foster in the developing individual? The theories of Piaget, and Erikson, for example, identify the highest levels of development in cognition and personality as desirable achievements along life's journey, especially by the time adulthood is reached. A group of developmental psychologists at the Search Institute have surveyed the large body of developmental findings and outlined forty qualities that should be nurtured during youth. These qualities are called developmental assets.

Twenty of these developmental assets are internal to the person, such as psychological qualities like self-esteem and a sense of purpose. The other twenty assets are external—resources like a caring educational environment and positive family communication—that are found in particular social connections and the broader community. A sample listing of these assets is found in Table 1.3.

Type of Asset	Asset Category	Description
External	Support	Strong support and effective communication from family, school, and other adults in the community
External	Empowerment	Adults in the community value youth engagement and strive to provide safe environments
External	Boundaries and expectations	Clear and consistent structures in family, school, and community that encourage youth toward high expectations and model positive, responsible behavior
External	Constructive use of time	Participation in a balance of activities such as youth and community programs, creative arts, sports, and religious practices
Internal	Commitment to learning	Motivation to be engaged in learning, fulfill academic responsibilities, and do their best in schooling
Internal	Positive values	Practicing behaviors based on caring, equality, integrity, honesty, and responsibility
Internal	Social competencies	Development of social skills and personal abilities aimed toward healthy choices, tolerance, understanding, and positive relationships with others
Internal	Positive identity	Sense of positive self-esteem, empowerment, and optimistic outlook over one's future

TABLE 1.3 Developmental Assets Framework The Developmental Assets Framework is copyrighted by Search Institute, Minneapolis, MN (www.searchinstitute.org) and used with permission.

These assets provide an inventory of developmental goals whose achievement can be assessed at various points in life. But they also serve as a set of value statements for those concerned with developing healthy and well-functioning individuals in our society. Research validating the assets has shown the benefits of this inventory approach. A large-scale survey of more than 100,000 youth in the United States revealed that individuals in grades six through twelve possessed, on average, twenty of the assets (Pekel et al., 2015; Roehlkepartain, 2015). The most common, held by more than 70 percent of the survey respondents, were integrity, achievement motivation, family support, positive peer influence, and a favorable view of their future. The least common, attained by 25 percent or fewer, were living in a community that values youth, reading for pleasure, and having creative activities to pursue.

Developing and possessing these assets makes a difference. The more assets an individual has acquired, the more likely they are to succeed in school, help others, value diversity, resist danger, and overcome adversity. In short, the more assets one possesses, the more likely the individual is to thrive. Individuals with fewer assets are more likely to engage in risky behaviors including drug and alcohol misuse and school truancy. Surveys like this allow us to measure our performance as a community in supporting the development of healthy and well-adjusted individuals.

References

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1979). *Patterns of Attachment.* Psychology Press.
Atkinson, R. C. (1968). Human memory: A proposed system and its control processes. *The psychology of learning and motivation, 2.*
Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal and Social Psychology, 63,* 575–582. https://doi.org/10.1037/h0045925
Bowlby, J. (1951). Maternal care and mental health. *Bulletin of the World Health Organization, 3*, 355-534.
Erikson, E. H. (1950). *Childhood and society*. W. W. Norton & Co.
Erikson, E. H. (1963). *Childhood and society* (2nd ed.). W. W. Norton & Co.
Ginsburg, H. P., & Opper, S. (1988). *Piaget's theory of intellectual development* (3rd ed.). Prentice-Hall, Inc.
Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511–524. https://doi.org/10.1037/0022-3514.52.3.511
Karantzas, G., Romano, D., & Lee, J. (2019). Attachment and aged care: A systematic review of current research. *Current Opinion in Psychology, 25*, 37–46. https://doi.org/10.1016/j.copsyc.2018.02.016
Kurland, R. & Siegel, H. (2020). Attachment and college academic success: A four-year longitudinal study. *Open Journal of Social Sciences, 8,* 45–55. https://doi.org/10.4236/jss.2020.812005
Piaget, J. (1952). *The origins of intelligence in children.* New York: International University Press. https://doi.org/10.1037/11494-000
Piaget, J. (1954). *The construction of reality in the child.* New York: Basic Books. http://dx.doi.org/10.1037/11168-000
Smith, E. T., Hennessee, J. P., Wig, G. S., Frank, S., Gonzalez, H., Bacci, J., Chan, M., Carreno, C. A., Kennedy, K. M., Rodrigue, K. M., Hertzog, C., Park, D. C. (2023). Longitudinal changes in gray matter correspond to changes in cognition across the lifespan: Implications for theories of cognition. *Neurobiology of Aging, 129*, 1–14. https://doi.org/10.1016/j.neurobiolaging.2023.04.014
Pekel, K.., Roehlkepartain, E. C., Syvertsen, A. K., & Scales, P. C. (2015). *Don't forget the families: The missing piece in America's efforts to help all children succeed (summary of key findings).* Search Institute. https://pub.search-institute.org/file/SearchInstitute-DontForgetFamilies-Summary-10-13-2015.pdf
Roehlkepartain, E. C. (2015). Years of Developmental Assets: Personal reflections (and a little data). *Search Institute*, 1-6.
Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis.* Appleton-Century-Crofts.
Skinner, B. F. (1961). *Cumulative record: A selection of papers.* Appleton-Century-Crofts.
Smith, E. T., Hennessee, J. P., Wig, G. S., Frank, S., Gonzalez, H., Bacci, J., Chan, M., Carreno, C. A., Kennedy, K. M., Rodrigue, K. M., Hertzog, C., & Park, D. C. (2023). Longitudinal changes in gray matter correspond to changes in cognition across the lifespan: implications for theories of cognition. *Neurobiology of aging, 129*, 1–14. https://doi.org/10.1016/j.neurobiolaging.2023.04.014
Smith, L., & Yu, C. (2008). Infants rapidly learn word-referent mappings via cross-situational statistics. *Cognition, 106*(3), 1558-1568.
intelligence: An experimental study of the associative processes in animals. *Psychological Monographs, 8.*
Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). Harvard University Press.
Vygotsky, L.S. (1998). Translated by Rieber, R. W., "The Collected Works of L.S. Vygotsky," *Volume 5, Child Psychology.* Plenum Press.

1.4 Contexts and Settings of Development

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the meaning of a contextual perspective on development
- Identify the various contextual settings of the ecological systems model
- Identify sources of influences that lead to individual differences and similarities across the lifespan
- Describe and give examples of cohort, identity, social, and cultural contexts

Chloe is a public health official working for the local government. They have been preparing a new program that will provide one year of comprehensive nutritional analysis and dietary recommendations for hundreds of older adults in the region. Participants will also receive five healthy meals per week delivered to them.

Chloe has a relatively large grant to pay for this program and all its benefits, and they want it to help as many

people as possible. They wonder how best to increase awareness and participation. They also worry that after the program ends in a year, participants won't be able to continue with the recommended nutritional guidelines. Chloe knows they can't make the program a success all on their own: support will be needed from partners in the community, ranging from government and non-profit agencies to faith-based organizations, local media, and volunteers who work in area businesses. The program's success depends on Chloe's ability to take full advantage of "the village," or the social system the older adults live within.

Chloe's task isn't just about creating a good program but also about understanding the complex social world of older adults. To really help, Chloe needs to see how different parts of these older adults' lives—like family, friends, and community services—all work together.

In considering the many theoretical perspectives in psychology, one stands out as closest to providing an overall framework for understanding the full complexity of human development within larger contexts like these. Urie Bronfenbrenner's ecological systems model is based on mapping out the interactions between developing individuals and various environmental influences (Bronfenbrenner, 1977). Developed in the late 1970s, this work was based on insights Bronfenbrenner had gained in the previous decade as a cofounder of the U.S. Head Start program, a groundbreaking interdisciplinary approach to aiding children through education-focused childcare, nutrition services, and parenting classes for caregivers. That federal program, which still assists millions of children today, contained many of the basic elements of Bronfenbrenner's proposed focus on the social ecology of human development.

Ecological Systems Model

As you're aware, human development is complex. Bronfenbrenner's original **ecological systems model** helps to rein in that complexity by providing a framework for understanding the various sources of influence on an individual's development (Bronfenbrenner, 1977). This map of the social and physical contexts for development can integrate the major contextual influences the field of lifespan psychology focuses on in one model or diagram. It helps account for and make sense of varied sources of development and points the way toward context-specific avenues for enacting change in a developing person's life.

For example, if we want to ensure every young person has a sense of purpose, the ecological systems model shows a variety of contexts where we can begin to build programming and other types of interactions to develop that sense. In this case, their purpose could include a series of curricular interventions at school, followed by community events at the county's recreation center, a media campaign on local television, and outreach to pediatricians' offices. In this way, the social ecological perspective proves its worth by serving developmental psychology's research and application goals.

The ecological systems model comprises several interrelated systems, nested inside one another, with the individual and their psychological and physical attributes at the core (Figure 1.13). Each system is made of various groupings of environmental influences, called contexts. As we move from the individual level toward the outer systems, influences on development become more removed from the individual and less direct. Proximal influences are those closest to the individual and that have the most direct influence.

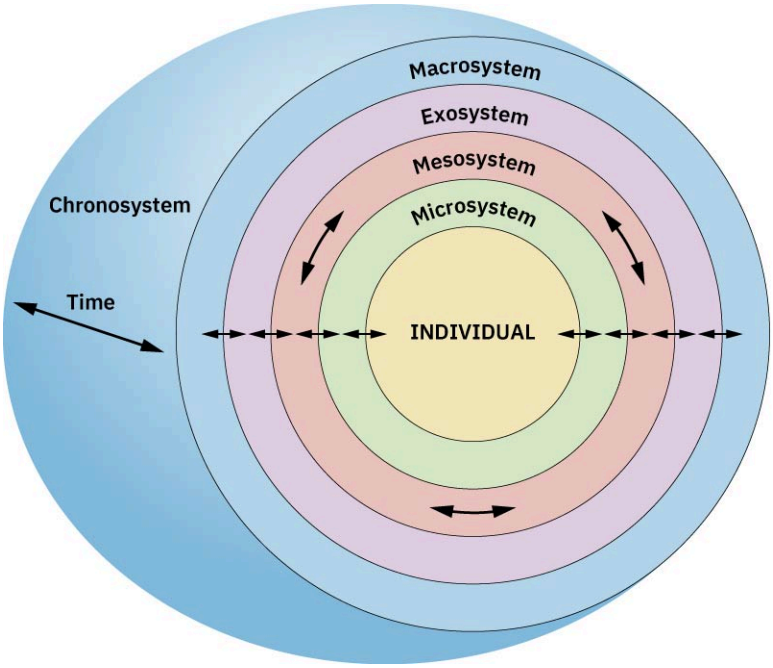


FIGURE 1.13 Bronfenbrenner's ecological systems model provides a framework for exploring the various contexts that influence human development across the lifespan from the individual to their direct experiences (microsystem) to more indirect influences (mesosystem and exosystem) to the broader culture (macrosystem) and across the passage of time and historical events (chronosystem). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The individual at the core of the ecological systems model includes all past and current psychological and physical functioning, including genetic influences. The developing person is active in this model by participating in and interacting within and among the variety of social contexts represented in each surrounding circle, such as school, peer group, health-care system, home environment, media, and community. Traditionally, much research in developmental psychology has focused on understanding how development occurs within these different contexts. For example, an entire subfield of psychology called educational psychology has the purpose of uncovering the psychological principles and schooling practices that foster academic achievement and personal development (El Zaatari & Maalouf, 2022). What Bronfenbrenner's model does is help us see that a child interacts, sometimes daily, sometimes on longer timeframes, within many such social contexts.

These different and distinct contexts or environmental settings—schools, family, peers, health care, faith community, and so on—together form the microsystem. If a developing individual directly experiences something, that is a part of their microsystem. Parents, siblings, peers, teachers, extended family members, adult mentors, and health-care professionals are all actors within a child's microsystem.

The **mesosystem** in Bronfenbrenner's model consists of interactions between the microsystems. These mesosystem contexts don't directly involve the developing individual. An example is parent-teacher communication, such as a parent-teacher-only conference. When elements from separate microsystem contexts such as school and home interact with one another, the individual is affected, though indirectly. The child will not be at the conference but will certainly become aware of any follow-up a parent or teacher may put in place. When a concerned neighbor calls a young adult's parents about their driving habits, this is another example of the mesosystem in action. And in some U.S. states, the driver's license bureau can share data with the local board of elections in order to register drivers to vote—another example of two different settings communicating for the benefit of the individual.

The next level outward, the **exosystem**, is also made up of social and physical settings or contexts that affect

the developing individual indirectly, but they are even further removed from the person's immediate experience or even knowledge. For example, a new workplace policy granting the ability to work from home twice weekly changes the way a caregiver can balance work and home life, likely making it easier to schedule doctor's appointments, run errands, and attend school functions. The developing child in this example may never visit the caregiver's workplace and might not be told about the new policy, but they certainly experience the indirect impacts all the same. Exosystem contexts often include a caregiver's workplace, the broader neighborhood or town, local political constituencies, the school board, extended family, and mass media.

At the furthest circle of influence is the **macrosystem**, which includes more abstract principles and ideas. This is where the beliefs and ideologies of culture reside. Broad, far-reaching influences like general social conditions and forces, national politics and laws, economic systems, cultural values, and/or religious ideology and/or cultural values help to shape the underlying structure of the entire social ecosystem. A change in one of these elements means large-scale, far-reaching, but very indirect changes to many other contexts in the exosystem, mesosystem, and microsystem.

One final level of the social ecological model is what Bronfenbrenner called the **chronosystem**. This element was his way of noting that all the contexts and interactions at all levels are moving together through historical time. Even if we could take a snapshot of an individual and map out all the sources of influence in great detail, the chronosystem reminds us that all those parts, and that detailed understanding, are subject to change over time. The COVID-19 pandemic is an example of both a macrosystem and chronosystem change as a historical event that forced the rethinking and reordering of nearly every function in every context in people's lives. The COVID-19 pandemic also impacted the life periods of each individual based on their life stage. For example, the stage of life a person was in when the pandemic began resulted in different experiences for the individual—from specific years of "school at home," to a shift to work from home, or even to moving up a retirement date to avoid individual health risks.

To understand how the ecological system model applies to the individual at its center, consider the example case of Elyse, who lives in the midwestern U.S. state of Minnesota. Elyse is six years old, healthy, feisty, and gender identifies as female (the *individual*). Her *microsystem* is her family (home environment), two neighborhood friends, her school and teachers, her pediatrician, and extracurriculars (art and T-ball). Elyse's *mesosystem* consists of the interaction and connection between the microsystem and other systems. For example, her father volunteers at her school and regularly talks to her teachers. Her *exosystem* is the government in the state and country, the political systems around her, the lawmakers of Minnesota, mass media (children's television and movies), and the county school district and school board, as well as her parents' colleagues, and work interactions. For example, when her mother has a stressful day at work, she comes home a bit grumpier and is less fun to play with. She doesn't interact with her mother's work personally, but it still influences her and the environments around her. Elyse's *macrosystem* is the U.S. culture and values of the current time (e.g., a value for consumerism and gender roles will influence her and the things around her even if in her family she is encouraged to be free to be herself and androgynous, or to value the "reduce, reuse, recycle" concept). Finally, Elyse's *chronosystem* is how these elements develop and change over time. For example, global concerns over environmental resources may result in shifts in the culture as more people take on values of sustainability.

There are a few ways developmental psychologists might describe the role of various environmental contexts and systems. For example, Bronfenbrenner later updated the ecological systems model to improve on the original model. The updated model is often referred to as the *bioecological model*, an expansion of the ecological systems model that includes the representation of the active individual human at the center of the model and engagement and growth across all the contextual layers (Tong & An, 2024). Another influential system theory is dynamic systems, which focuses on the interaction between aspects of the child, such as their cognition and physical motor skills, and their environment, such as their play space or home (Thelen & Smith, 2007). The unifying theme of these systems models is that humans are growing and changing in a rich set of contextual environments: just as the environments influence the individual, the individual also influences the

environment.

Contexts of Growth and Change

In the study of psychology across the lifespan, microsystem contexts help to place development within major influential settings. In many cases, a context becomes a source of its own unique set of influences. Schooling, for example, is a major portion of most children's day and presents its own forces and situations that shape an individual's development. You'll learn about these contexts—like schools, parents, peers, media, legal settings, and health-care settings—where especially relevant to understanding unique sources and mechanisms of influence on development, and to identify specific opportunities and challenges facing those who wish to apply developmental science within these settings. Some of the questions and issues you'll explore in this course include the following:

- What is the best way to structure the school day in terms of start times?
- Should students be grouped by similar ability level or across levels?
- At what age is an individual ready to participate in medical decision-making?
- Are there ways to prevent bullying behavior?
- How much screen time is unhealthy for development?
- What laws and policies can best support work-life balance?
- How best can we support successful retirement planning?

Historical and Cohort Contexts

Ahmed was born in 1978 and is a member of Generation X, the name often given to the group of individuals born approximately between 1965 and 1980. Members of this age cohort (you may have heard this termed "generation") grew up without computers in their homes but likely were exposed to computers in their K–12 or college education. The internet emerged in the mid-1990s when this group entered young adulthood. Social media became available as this age cohort approached middle adulthood.

The chronosystem is the basis for the notion of a **cohort effect**, the influence of a shared or common experience on people who are about the same age at the same time (Figure 1.14). Like the members of other cohorts, Gen Xers likely share the experience of many historical events, cultural milestones, and technological innovations, such as the dissolution of the Soviet Union and the cultural explosion of music videos. Most importantly, they were in roughly the same age range during these experiences, making them members of a generational cohort who share similar psychological consequences of these events. For example, Gen Xers have been referred to as digital immigrants, whereas individuals born after 1980 (the age cohort sometimes called Millenial) are considered digital natives. People in these different generational cohorts tend to have different comfort levels with new uses for digital technology. One study found that individuals in the older cohort were willing to adopt "tap" payment systems in stores and restaurants, but weighed the risks and convenience factors more carefully than those born more recently (Agardi, et al., 2022).

(a) (b) (c)

FIGURE 1.14 People belonging to a generational cohort share the experiences of historic events and social changes at a similar age. For example, individuals who experienced (a) the Great Depression, (b) the 9/11 terrorist attacks, or (c) virtual schooling due to the COVID-19 pandemic, will share some aspects of development with others who

experienced those at the same life stage. (credit a: modification of work “Unemployed men queued outside a depression soup kitchen opened in Chicago by Al Capone” by National Archives at College Park/Wikimedia Commons, Public Domain; credit b: modification of work “Explosion following the plane impact into the South Tower (WTC 2) - B6019~11” by “rds323”/Wikimedia Commons, Public Domain; credit c: modification of work “Teachers Teaching” by Phil Roeder/Flickr, CC BY 2.0)

Thus, age, history, and society combine to provide groups of individuals with shared experiences that may affect a variety of issues related to psychological functioning across the lifespan, such as having shared anxiety about the threat of nuclear war (GenX), or being more open to sharing many aspects of their lives with strangers on the internet (age cohorts raised during the rise of smartphones and social media). However, it is important to remember that not all group members share all these experiences, and age cohorts are often twelve to fifteen years in range, making for a varied degree of impact of cohort effects (Pew Research Center, 2023a). For example, some from the Gen Z cohort (born after 1996) who were born in 1997 likely have different experiences with smartphones and the age at which they got their first smartphone compared to Gen Z members born in 2007 around the same time that smartphones were becoming widely available to many. Nevertheless, cohort effects, as part of Bronfenbrenner’s chronosystem, remind us that the world is ever-changing.

LINK TO LEARNING

Visit the Mindset List that compiles information about cohorts of college students by class year (https://openstax.org/r/104MindSetList) on Marist College’s website. Examine the graduating college class of 2023 and the latest class of 2027 list for examples of cohort-based experiences and trends that have shaped the mindset, experiences, and career opportunities of these cohorts.

It is also important to keep in mind that the term *cohort* often more accurately describes a group’s shared experiences than the term *generation*, which can sometimes result in stereotyping a group according to their age. Individual differences in things like cultural experiences, economic resources, and where you live can mean that two individuals who share the same year of birth have very different experiences. For example, a child growing up in a family with more financial resources and/or parents who value staying connected may receive a smartphone while they are in elementary school, while a child growing up in a family with fewer financial resources and/or parents who pay close attention to “tech time” might not have their first smartphone until they are in their mid-to-late teens. At the very least, psychological research needs to be mindful of the potential impact of such effects and periodically revisit research findings and theories to test for any influence of such cohort-based experiences.

LINK TO LEARNING

Have you ever thought about what your generational cohort has in common with other generations? Or do you tend to only focus on the differences? Review this brief list from the Pew Research Center about how the term “generations” can be misused (https://openstax.org/r/104Generation) to learn more.

Identity, Social, and Cultural Contexts

Research findings in psychology are often broken down by social or cultural sub-groups of particular interest or identification. These include biological sex, gender, race and ethnicity, religious beliefs, socioeconomic status, and cultural influences, among others. When developmental psychologists use these terms, they do so with the specific meanings they carry in psychology. These contexts are all important to the overall process of human development and our understanding of it.

Sex, gender, and sexual orientation are key components of human development and are distinctive terms (National Academies of Sciences, Engineering, & Medicine, 2022). An individual’s **sex** is assigned at birth

based on their biological anatomy and physiology (such as chromosomes). People may be assigned female, male, or intersex. An individual's sex should not be confused with their **gender**, which describes society's ideas about the roles, attitudes, and behaviors associated with someone's sex assignment. For example, being born with a penis results in being assigned the *sex* male; exhibiting behaviors such as participating in rough sports or suppressing emotions results in being associated with the *gender* male in cultures where those behaviors are associated with masculinity. Some people, researchers, and advocates aim to separate descriptors of sex (female and male) from those of gender (girl, woman, boy, man, nonbinary, and so on). While it is best to be as precise as possible, this practice is not universal and may be complicated when both sex and gender are involved in a topic or outcome. As a result, many studies or documents use sex and gender terms interchangeably.

The way a culture decides whether a characteristic or behavior is associated with a gender can also change over time. For example, in the United States the color blue is often associated with baby boys; however, if you looked to popular trends before the 1940s, pink was associated with boys and blue was associated with girls (Maglaty, 2011). Someone's psychological sense of their gender is their **gender identity** and reflects ideas about femininity, masculinity, non-binary characteristics, and other dimensions of gender. How someone labels their gender identity is also related to whether their gender matches society's expectations based on sex assignment. Conforming is denoted by the prefix cis- (such as a cis gender man) and non-conforming by the prefix trans- (such as a transgender individual). A person's **sexual orientation** includes their sexual identity, sexual behavior, and sexual attraction, or to whom someone is sexually attracted. Note that sexual attraction can differ from emotional attraction. Figure 1.15 visualizes some of these terms and their varied meanings.

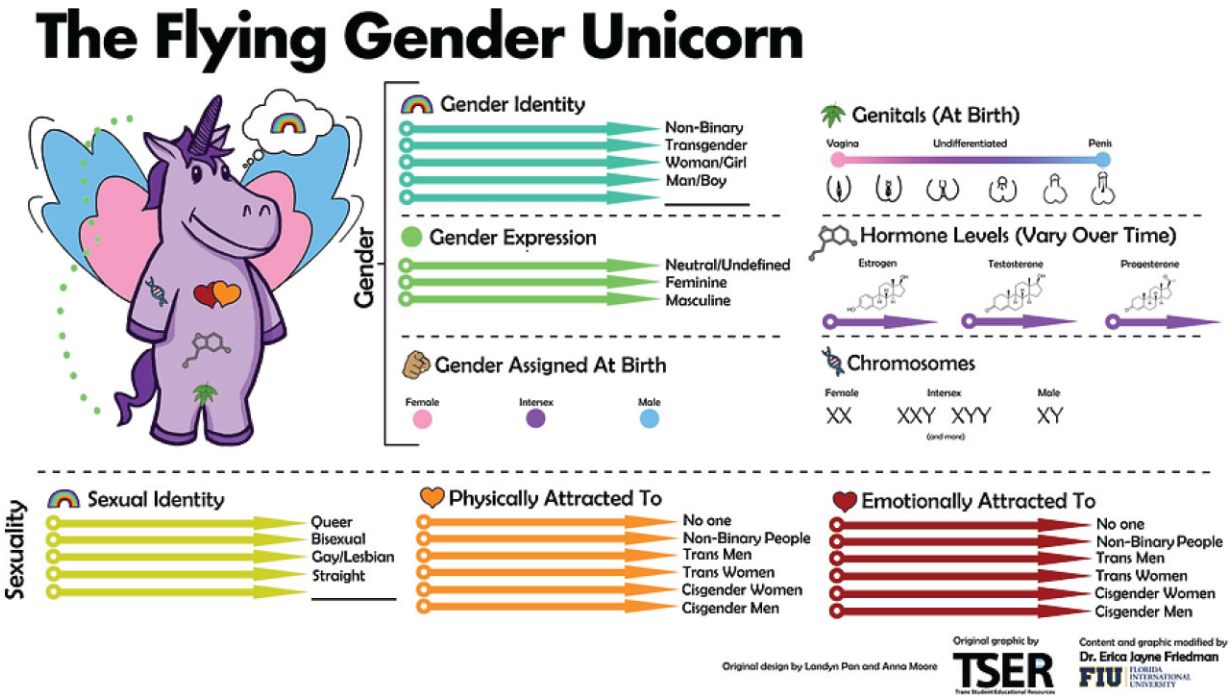


FIGURE 1.15 The "Gender Unicorn" is a visual concept developed by Trans Student Educational Resources. This "Flying" version from Florida International University was created to promote education and discussion about the many facets of gender. (credit: modification of work "The Gender Unicorn" by Landyn Pan and Anna Moore/Trans Student Educational Resources, CC BY 4.0)

Race and ethnicity are also often confused, but they are distinct contributing parts of an individual's identity. The concept of race is extremely complex and has a long and troubling history, and there is no genetic basis for **race** (Duello et al., 2021), meaning an individual's race cannot be determined by analyzing their DNA. Race is thus a socially constructed concept that describes a highly variable mix of physical characteristics, heritage, culture of origin, and the way someone identifies themselves and how others identify them. Someone's

ethnicity describes shared characteristics or identification based on cultural or social elements such as heritage, religion, language, or geographic or national origin, and includes ideas about race. Often, the two concepts are conflated. For example, one study might focus on Black individuals (a racial designation) and another on African American participants (a designation of ethnicity). It is important to be aware of racial and ethnic categorizations when reviewing research. Ethnicity is often best described as accurately as possible and in a way that respects how that group or person identifies. For example, using the term Japanese American (a designation of ethnicity describing individuals living in the United States with Japanese culture or heritage) might more precisely describe a group than the term Asian American (a designation of ethnicity that includes the cultural heritage of a wide range of Asian countries or Asian ethnicities). In most cases, the psychological processes of interest in any comparison are more closely related to the cultural and/or national heritage of the participants (Irizarry et al., 2023) than to race. The reason is that heritage includes many behaviors, attitudes, and practices that are the likely mechanism of influence for any psychological findings. For this reason, we also use the term **ethnoracial** for findings that focus on ethnicity as the primary variable but also acknowledge the social construction of race.

Generally speaking, **socioeconomic status** (SES) is a description of someone's social standing. It has three main components: income level, educational attainment (the highest level of formal schooling reached), and occupational prestige. As an example, for many mid-career cardiologists, income level is moderate to high, educational attainment is the highest, and occupational prestige is high, resulting in a middle- to upper-middle SES position in society. In contrast, a college professor raising two children on one income may be described as having a low to moderate income, with educational attainment at the highest, and a moderate to high occupational prestige. For identifying the SES of children and adolescents, researchers use parental information about the three elements.

An individual's religious or spiritual beliefs and practices, and those that surround them, also play an important role in development across the lifespan. A **religion** is a formal system of beliefs, values, and practices organized around the worship of a higher being(s) or power(s). According to a 2022 Gallup poll, two-thirds of the world's population belong to a religion. The term **religiosity** refers specifically to religious behaviors such as praying, giving money to a place of worship or religious organization, and being active within a religious community. It is possible to identify as belonging to a religion but to be low in religiosity. The term **spirituality** refers to an individual's search for the sacred. This search can vary across a spectrum from belonging to an organized religion to being very personal and private. Almost a quarter of U.S. adults (22 percent) consider themselves spiritual but not religious (Alper et al., 2023). One way to think about the relationship among these three concepts is that religion is part of your social identity, religiosity describes your behaviors within that social group, and spirituality is what you experience on a psychological level.

The term **culture** is often used interchangeably with "nation" or "society," but it is broader than either and often refers to the shared characteristics of populations that cross national boundaries. Sometimes a culture might also overlap with a religious group. For example, a person may describe themselves as part of the Jewish culture and may or may not also identify with Judaism (as a religion). It's important to note that in many instances these terms may overlap each other. Others may be drawn toward both, valuing the different aspects of cultural and/or religious Judaism. So these terms are often not clearly distinct from one another. Culture also include informal institutions, rules, and practices. Veganism, for example, is a culture. Similarly, the college you attend like has its own college culture. A **society**, in contrast, is a recognized group of people who live within a formal system of rules and institutions like a government and school systems. The Navajo Nation is an example of a society, though many members may identify themselves as part of the Diné culture. In a review analyzing the many uses of the word "culture," Cohen (2009) outlined three main concepts of its psychological definition.

- Culture includes a set of adaptations to the physical and social world—a set of practices, behaviors, rules, norms, and ways of being that help members of that culture navigate the challenges and opportunities of life.

- These adaptations have meanings shared by members of the culture.
- These shared adaptations are passed from generation to generation, thereby ensuring the culture persists over time.

A culture can have many members or just a few, if these three elements are present. Each of us is likely a member of many different cultures, some more important or central to our sense of self than others. For example, you may be part of Southern California culture, American culture (broadly), Mexican American culture, and Generation Z culture simultaneously. These overlapping cultural groups contribute to your unique identity.

Generalizability

Lifespan developmental psychology is a broad discipline. It is not only a subfield of the scientific study of psychology: it also often incorporates perspectives and research findings from across a variety of disciplines including anthropology, neuroscience, biology, sociology, economics, and history. As the world gets smaller and more interconnected via travel, migration, trade, and communication technologies, the biggest challenge the discipline faces is assessing the **generalizability** of its findings. In short, to what extent do the theories, research methods, and findings apply universally—that is, to all people in all societies around the world?

In the last decade, psychology has been challenged to address the universality of its findings. A landmark article by Henrich et al. (2010) highlighted that much of the research on which psychology is based is WEIRD. The acronym describes the people researchers have often studied:

- **W**estern (includes the United States, Canada, and Western European countries, such as France and Germany)
- **E**ducated (includes those who have gone to college)
- **I**ndustrialized (includes countries with infrastructures and advanced technology)
- **R**ich (includes those who have enough money to have a higher standard of living)
- **D**emocratic (includes political systems based on elected representation and individual rights)

Why might this be so? Recall that psychology at its founding emphasized the study of individuals, which meant that some societies, through their emphasis on individuality, were more receptive to this new discipline than others (Pelham et al., 2022). As such, psychology's roots in many European countries, especially Germany, Great Britain, and France, and the quick pace in which the discipline took hold in the United States and Canada, inadvertently introduced this WEIRD bias. Findings from this restrictive WEIRD sample have long been assumed to generalize to people from most societies. But today we must ask: how truly representative of all humans are these findings? In research we often strive for a **representative sample** which is a sample of participants that accurately reflects, or represents, the group of people we are making conclusions about. A more representative sample allows us to better generalize our findings to the population.

Although the establishment of psychology's scientific roots occurred first in Europe and the United States, it did not take much time until researchers from around the world began to establish their own laboratories and research programs. For example, some of the first experimental psychology laboratories in South America were founded by Horacio Piñero (1869–1919) at two institutions in Buenos Aires, Argentina (Godoy & Brussino, 2010). In India, Gunamudian David Boaz (1908–1965) and Narendra Nath Sen Gupta (1889–1944) established the first independent departments of psychology at the University of Madras and the University of Calcutta, respectively. These developments provided an opportunity for Indian researchers to make important contributions to the field (Gunamudian David Boaz, n.d.; Narendra Nath Sen Gupta, n.d.).

In searching the psychological literature, Draper and colleagues (2023) found rare instances when a topic had been studied across multiple cultures. Nevertheless, a growing amount of research in a variety of psychological topics is now aimed at determining whether the discipline's findings are universal or whether we should expect cultural variation to be the norm (Draper et al., 2023). These topics include personality structure, visual perception, attachment and human bonding, conceptions of the self, degree of

interconnectedness, conformity, and reasoning style.

Consider the example of schoolchildren learning fractions. Recall that in Vygotsky's sociocultural theory of cognitive development, language can be a tool that guides cognition and cognitive development. Cross-cultural research has highlighted a language-based explanation for why Korean children may have an easier time learning fractions than their U.S. counterparts. The Korean language is more straightforward when describing fractions—½ is expressed as "one of two parts" instead of "one-half" as in English (Paik & Mix, 2003). The more transparent expression may help Korean children master the concept more readily. Learning complex mathematical concepts is universal, but the rate and level of achievement might vary due to cultural differences.

The lack of representation in historic research and modern insights into generalizability provide the discipline of lifespan development with a call to expand thinking and research to include people from more walks of life and from across the globe. The psychological sciences have already made large advances in including more representation in those who do the research—or the experts in the field of psychology and lifespan development. For example, in terms of gender inclusion, the American Psychological Association began in 1892 with all men members, but by 1946, nearly one-quarter of American psychologists were women (Women and Minorities in Psychology, n.d.).

Making progress in representation of the experts in the field of study as well as the populations and cultures studied can advance our understanding of human development at every contextual level—from individual differences to cultural commonalities. An example is the ManyBabies project, which is a global collaboration of developmental researchers that has shown how similar babies across cultures are when it comes to things like their preference for certain speech styles, known as infant-direct speech (ManyBabies, 2024). Sometimes the research shows us that the early findings exclusive to WEIRD populations are also found in newer research on non-WEIRD populations. For a science that looks to both nature and nurture for sources of influence on development, we are likely to find patterns of similarity in psychological functioning across all humans, even as we find specific behaviors that have their own nuanced and even unique developmental trajectory around the world.

References

Agardi, I., & Alt, M. (2022). Do digital natives use mobile payment differently than digital immigrants? A comparative study between generation x and z. *Electronic Commerce Research, 1*(1), 1–28. https://doi.org/10.1007/s10660-022-09537-9

Alper, B. A., Rotolo, M., Tevington, P., Nortey, J., Kallo, A. (2023). *Spirituality among Americans.* Pew Research Center. https://www.pewresearch.org/wp-content/uploads/sites/20/2023/12/PR_2023.12.7_spirituality_REPORT.pdf

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American psychologist, 32*(7), 513. https://doi.org/10.1037/0003-066X.32.7.513

Cohen, A. B. (2009). *Many forms of culture. American Psychologist, 64*(3), 194–204. https://doi.org/10.1037/a0015308

Draper, C. E., Barnett, L. M., Cook, C. J., Cuartas, J. A., Howard, S. J., McCoy, D. C., Merkley, R., Molano, A., Maldonado-Carreño, C., Obradovi, J., Scerif, G., Valentini, N. C., Venetsanou, F., Yousafzai, A. K.. (2023). Publishing child development research from around the world: An unfair playing field resulting in most of the world's child population under-represented in research. *Infant and Child Development, 32*(6), https://doi.org/10.1002/icd.2375

Duello, T. M., Rivedal, S., Wickland, C., & Weller, A. (2021). Race and genetics versus 'race' in genetics: A systematic review of the use of African ancestry in genetic studies. *Evolution, Medicine, and Public Health, 9*(1), 232–245. https://doi.org/10.1093/emph/eoab018

El Zaatari, W., & Maalouf, I. (2022). How the Bronfenbrenner Bio-ecological System Theory Explains the Development of Students' Sense of Belonging to School? *Sage Open, 12*(4). https://doi.org/10.1177/21582440221134089

Gallup. (2022). More prone to believe in God than identify as religious. More likely to believe in heaven than in hell. https://www.gallup-international.com/survey-results-and-news/survey-result/more-prone-to-believe-in-god-than-identify-as-religious-more-likely-to-believe-in-heaven-than-in-hell

Godoy, J. C., & Brussino, S. (2010). Psychology in Argentina. *The Corsini Encyclopedia of Psychology*. John Wiley & Sons. https://doi.org/10.1002/9780470479216.corpsy0079

Gunamudian David Boaz. (n.d.). *World Library*. http://www.worldlibrary.org/articles/Gunamudian_David_Boaz

Henrich, J., Heine, S., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 1–75. https://doi.org/10.1017/S0140525X0999152X

Irizarry, Y., Monk, E. P., & Cobb, R. J. (2023). Race-shifting in the United States: Latinxs, skin tone, and ethnoracial alignments. *Sociology of Race and Ethnicity, 9*(1), 37–55. https://doi.org/10.1177/23326492221114813

Maglaty, J. (2011). When did girls start wearing pink? Smithsonian Magazine. https://www.smithsonianmag.com/arts-culture/when-did-girls-start-wearing-pink-1370097/

ManyBabies (2024). MB1: Infant-Directed Speech Preference. https://manybabies.org/MB1/

Narendra Nath Sen Gupta. (n.d.). *Veethi: The face of India*. https://www.veethi.com/india-people/narendra_nath_sen_gupta-profile-4893-16.htm

National Academies of Sciences, Engineering, and Medicine. 2022. Measuring Sex, Gender Identity, and Sexual Orientation. Washington, DC: The National Academies Press. https://doi.org/10.17226/26424.

Paik, J. H., & Mix, K. S. (2003). U.S. and Korean children's comprehension of fraction names: A reexamination of cross-national differences. *Child Development, 74*(1), 144–154. https://doi.org/10.1111/1467-8624.t01-1-00526

Pelham, B., Hardin, C., Murray, D., Shimizu, M., & Vandello, J. (2022). A truly global, non-WEIRD examination of collectivism: The global collectivism index (GCI). *Current Research in Ecological and Social Psychology*. https://doi.org/10.1016/j.cresp.2021.100030

Pew Research Center. (2023a). How Pew Research Center will report on generations moving forward. https://www.pewresearch.org/short-reads/2023/05/22/how-pew-research-center-will-report-on-generations-moving-forward/

Pew Research Center. (2023b). Who are 'spiritual' but not religious' Americans? https://www.pewresearch.org/religion/2023/12/07/who-are-spiritual-but-not-religious-americans/

Thelen, E. & Smith, L.B. (2007). Dynamic Systems Theory. Volume 1: Theoretical Models of Human Development. *Handbook of Child Psychology*.

Tong, P., & An, I. S. (2024). Review of studies applying Bronfenbrenner's bioecological theory in international and intercultural education research. *Frontiers in psychology, 14*, 1233925. https://doi.org/10.3389/fpsyg.2023.1233925

Women and Minorities in Psychology. (n.d.). *IResearch*. http://psychology.iresearchnet.com/history-of-psychology/women-and-minorities/

1.5 Lifespan Development as a Science: Research Methods

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the major research methods for studying individuals across the lifespan
- Describe the strengths and weaknesses of different research methods
- Compare and contrast correlation and causation
- Discuss ethical considerations in lifespan developmental research

Ryne works for the federal government and was recently put in charge of selecting an anti-bullying program to recommend to all school districts in the country. Many programs have been created and tested in different settings over the past few years. They vary on the age range of the children they were tested on, the time each takes to deliver, the number of sessions, whether the participants' behavior was tracked across time, and whether a teacher, a principal, or a safety officer delivered the program. Luckily, Ryne has training in social science research methods and was able to think through relevant issues to help make the determination. For example, it was important to consider which programs show a cause-and-effect relation between program delivery and a decrease in school bullying, and also whether any unique aspects of the settings in which each program was tested might disqualify them for nationwide implementation.

Ryne's job shows how important research skills are in the scholarship and application of issues across the discipline of developmental psychology. This way of thinking is like what psychological scientists do: they look at evidence carefully, think about issues that could affect the results, and focus on studies that show a clear connection between cause and effect. Ryne is using this scientific way of thinking to deal with a real-world problem.

Psychological Research

While behavior is observable, the mind is not. If someone is crying, we can see behavior. However, the reason for the behavior is more difficult to determine. Is the person crying due to being sad, in pain, or because they are happy? Sometimes we can learn the reason for someone's behavior by simply asking a question, like "Why are you crying?" However, there are situations in which an individual is either uncomfortable or unwilling to answer the question honestly or is incapable of answering. For example, infants would not be able to explain why they are crying. In such circumstances, the developmental psychologist must be creative in finding ways to better understand behavior. An important foundation of the study of lifespan development is understanding how scientific knowledge is generated, and how important that knowledge is in forming decisions in our personal lives.

While many of us feel confident in our abilities to decipher and interact with the world around us, history is filled with examples of how very wrong we can be when we fail to recognize the need for evidence in supporting claims. It is through systematic scientific research that we are able to disengage ourselves of our preconceived notions and superstitions and gain an objective understanding of ourselves and our world.

The goal of all scientists is to better understand the world around them. Developmental psychologists focus their attention on understanding behavior, as well as the cognitive (mental) and physiological (bodily) processes that underlie behavior. In contrast to other methods that people use to understand the behavior of others, such as intuition and personal experience, the hallmark of scientific research is that there is evidence to support a claim. Scientific knowledge is empirical: It is grounded in objective, tangible evidence that can be observed and replicated.

The Process of Scientific Research

Scientific knowledge is advanced through the scientific method, in which ideas (in the form of theories and hypotheses) are tested against the real world (in the form of empirical observations). Those empirical observations lead to more ideas that are tested against the real world, and so on.

In this sense, the scientific process is a cycle of deductive and inductive reasoning (Figure 1.16). Researchers test ideas: in deductive reasoning, ideas are tested in the real world; whereas in inductive reasoning, real-world observations lead to new ideas. These processes are inseparable, like inhaling and exhaling, but different research approaches place different emphasis on these aspects. For example, case studies are heavily weighted on the side of empirical observations. Thus, case studies are closely associated with inductive processes as researchers gather massive amounts of observations and seek interesting patterns (new ideas) in the data. Experimental research, on the other hand, puts great emphasis on deductive reasoning.

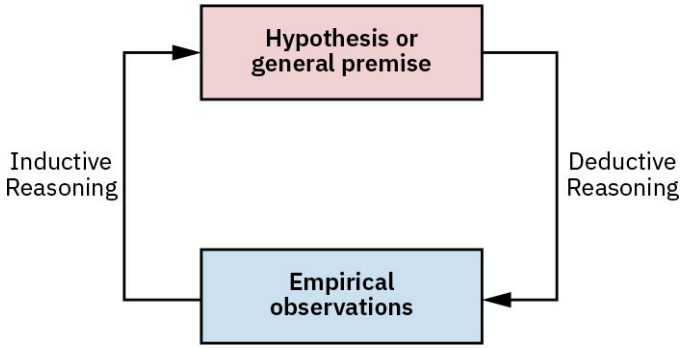


FIGURE 1.16 Psychological research relies on both inductive and deductive reasoning. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

If both theories and hypotheses are ideas, what sort of ideas are they, exactly? A **theory** is a well-developed set of ideas that propose an explanation for observed phenomena. Theories are repeatedly checked against the world, but they tend to be too complex to be tested all at once; instead, researchers create hypotheses to test specific aspects of a theory. For example, many of the theories discussed thus far have been tested by many, many research studies over multiple decades resulting in a more current version of the theory. This is demonstrated in things like our updated understanding of language development and the role of the environment in learning language. A **hypothesis** is a testable prediction about how the world will behave if our idea is correct, and it is often worded as an if-then statement (e.g., if I study all night, I will get a passing grade on the test). The hypothesis is extremely important because it bridges the gap between the realm of ideas and the real world. As specific hypotheses are tested, theories are modified and refined to reflect and incorporate the result of these tests (Figure 1.17). Note that theories are not typically proven: rather they are supported, modified, or rejected.

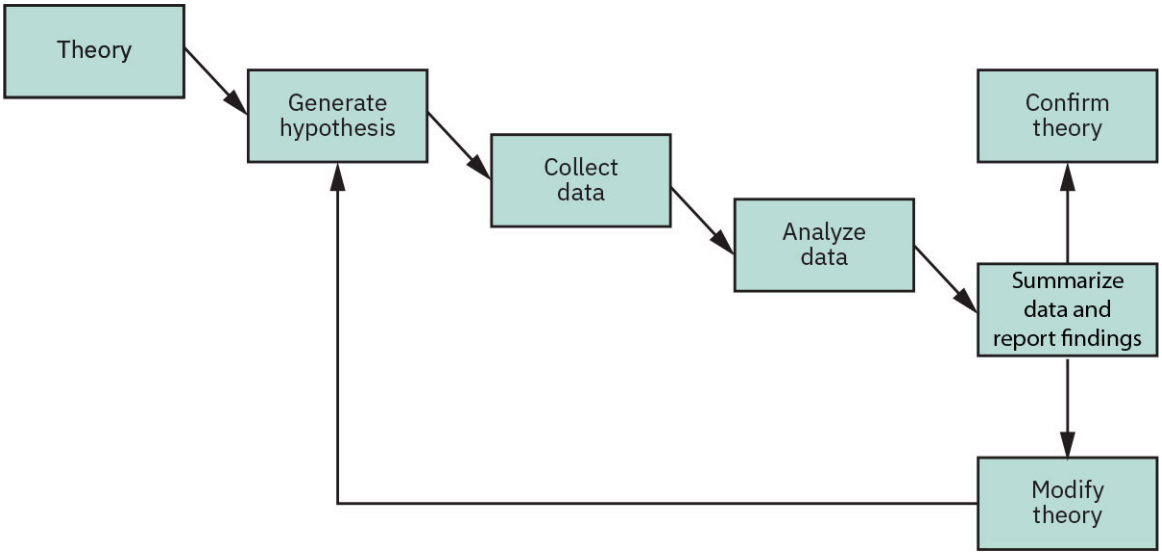


FIGURE 1.17 The scientific method involves deriving hypotheses from theories and then testing those hypotheses. If the results are consistent with the theory, then the theory is supported. If the results are not consistent, then the

theory should be modified and new hypotheses will be generated. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Psychological Research in Developmental Psychology

Developmental psychology, as part of the broader scientific community, has several overarching goals. Those goals can be organized to match the way a developmental scientist may approach any new topic of inquiry. The first goal is accurate measurement and description of the phenomenon in question. With proper research methods and techniques come detailed descriptions of the research question. In the case of cognitive development, for example, Piaget pioneered the clinical interview method to uncover children's underlying thought processes. This led to rich descriptions of the reasoning abilities of children of various ages. To summarize this first goal, it seeks to answer the question, "What is happening?"

The next goal of science is to understand and explain a phenomenon. It is not enough to merely describe what is observed. Rather, we want to understand the processes that make that phenomenon work, and to explain it to others in a coherent and complete way. Piaget developed and then tested a complete theory of how children solved problems about their world. The result is his theory of cognitive development, which attempts to explain how children's thinking abilities develop over the first twenty years of life. To summarize this second goal, we now ask, "Why is this thing happening?"

The final goal of developmental psychology science, which relies on our understanding from achieving the second goal, is to apply and control the phenomenon. That is, developmental scientists aim to take their findings and explanations and apply them in the service of the individual or society. In this way, the goals of the scientific method mirror what humans have done as a matter of survival for millennia: adapt to and strive to thrive in the physical and social world, thereby assisting in our shared survival and enjoyment of life. To summarize this final goal, we are asking, "If this thing is going to happen again, how can we (or should we) control it?"

Reliability and Validity

Whether you are on a path to become a health care professional, educator, or psychologist, or just have an interest in human development across the lifespan, scientific literacy is a valuable life skill. Being able to discern the credibility of various studies or statistics is important. Understanding statistics and scientific findings, such as percentages, can help you determine which research results are worth applying. For example, if a medical doctor gives you two options for a medicine, it would be helpful to know which one is most effective and whether its benefits outweigh the potential costs. Because much research in developmental psychology requires studies across longer timespans, it is helpful to know how to trust in the findings of a study and differentiate trustable research from bogus science. Being able to determine bogus science can also help you make effective choices for your health and well-being rather than risk wasted money or time on something that doesn't work.

For research to be trusted, it needs to be proven to be both reliable and valid (Figure 1.18). The ability to consistently produce a given result is referred to as **relability**. In the context of psychological research, this would mean that any instruments or tools used to collect data do so in consistent, reproducible ways.

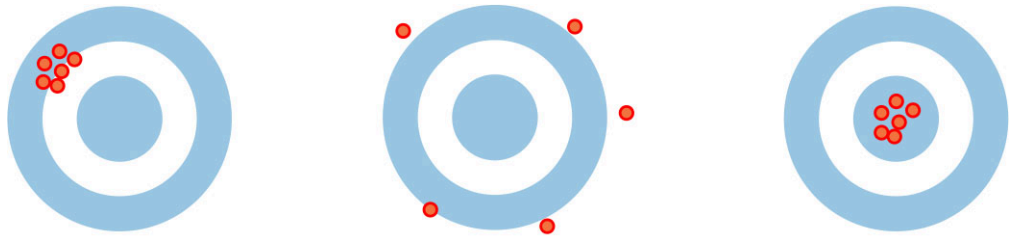


FIGURE 1.18 Both reliability and validity are important considerations in the planning and analysis of scientific research. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Unfortunately, being consistent in measurement does not necessarily mean that you have measured something correctly. To illustrate this concept, consider a kitchen scale that would be used to measure the weight of cereal that you eat in the morning. If the scale is not properly calibrated, it may consistently under- or overestimate the amount of cereal that's being measured. While the scale is highly reliable in producing consistent results (e.g., the same amount of cereal poured onto the scale produces the same reading each time), those results are incorrect because the tool's calibration is off. This is where validity comes into play.

The term **validity** refers to the extent to which a given instrument or tool accurately measures what it's supposed to measure. For example, a driving test to determine if someone is ready to have a driver's license is likely to be more valid if it ensures the person knows the rules of driving (written portion) and can also drive a vehicle effectively (applied portion). If we only used one of those, getting a driver's license might not accurately indicate that a person can drive safely. Researchers strive to design studies and use instruments that are both highly reliable and valid.

The temptation to make erroneous cause-and-effect statements based on correlational research is a common way people tend to misinterpret data. We also tend to make the mistake of illusory correlations, especially with unsystematic observations. Illusory correlations, or false correlations, occur when people believe that relationships exist between two things when no such relationship exists. One well-known illusory correlation is the supposed effect that the moon's phases have on human behavior. Many people passionately assert that human behavior is affected by the phase of the moon, and specifically, that people act strangely when the moon is full

There is no denying that the moon exerts a powerful influence on our planet. The ebb and flow of the ocean's tides are tightly tied to the gravitational forces of the moon. Many people believe, therefore, that it is logical that we are affected by the moon as well. A meta-analysis of nearly forty studies consistently demonstrated, however, that a relationship between the moon and our behavior does not exist (Rotton & Kelly, 1985). While we may pay more attention to odd behavior during the full phase of the moon, the rates of odd behavior remain constant throughout the lunar cycle.

Why are we apt to believe in illusory correlations like this? Often we read or hear about them and simply accept the information as valid. Or, we have a hunch about how something works and then look for evidence to support that hunch, ignoring evidence that would tell us our hunch is false; this is known as confirmation bias. Other times, we find illusory correlations based on the information that comes most easily to mind, even if that information is severely limited. And while we may feel confident that we can use these relationships to better understand and predict the world around us, illusory correlations can have significant drawbacks. For example, research suggests that illusory correlations—in which certain behaviors are inaccurately attributed to certain groups—are involved in the formation of prejudicial attitudes that can ultimately lead to discriminatory behavior (Fiedler, 2004).

When evaluating findings, it is important to consider the extent to which a study complies with established

standards of research integrity, and also to understand that an initial finding may suggest an exciting discovery but may not prove to be accurate once further research is conducted to replicate the results. For example, the popular idea that there is a connection between vaccines and autism spectrum disorder originated from findings that were falsified and later retracted. While there were seemingly logical connections—the Centers for Disease Control and Prevention recommending that mercury be removed from vaccines, similarities between symptoms of mercury poisoning and symptoms of autism spectrum disorder—the empirical evidence showed that there was no causal connection between those observations. The now-debunked study connecting vaccines to autism spectrum disorder remains a popular concept but is not supported by science. This case highlights the importance of scientists complying with the standards set by regulating bodies.

Another example—the so-called "Mozart effect"—elucidates the importance of replicability. One study may find certain results, but before those are generalizable, researchers in psychology need to demonstrate that the same results occur in other studies. Due to the nature of the time required to study change in a human, sometimes it takes several years, or even decades, to test whether results are replicable. When Rauscher and colleagues (1993, 1995; Jenkins, 2001) reported that listening to music by Mozart improved how children performed on tests, it spawned a popular trend to integrate that music and concept into children's toys, books, and educational programming. While Rauscher's findings were true to that particular study, subsequent researchers could not replicate the surprising findings. In further studies (Jenkins, 2001; Rauscher, 1995), it was determined that there was little to no scientific support for the Mozart effect (Pietschnig et al., 2010). In this example, we see that replication is important in psychological research, especially in context of it being applied to everyday life.

Research Design

Many research methods are available to psychologists in their efforts to understand, describe, and explain behavior, change, and growth, plus the cognitive and biological processes that underlie such change. Some methods rely on observational techniques, while other approaches involve interactions between the researcher and the individuals who are being studied. Each research method has unique strengths and weaknesses, and each method may only be appropriate for certain types of research questions. For example, studies that rely primarily on observation produce large amounts of information, but the ability to apply this information to the broader population (representativeness of the sample) is somewhat limited because of small sample sizes.

Correlational research can find a relationship between two variables, but the only way a researcher can claim that the relationship between the variables is cause and effect is to perform an experiment. In experimental research, there is a tremendous amount of control over variables of interest. While this is a powerful approach, experiments are often conducted in artificial settings. This calls into question the ecological validity of experimental findings with regard to how they would apply in real-world settings. In addition, many of the questions that psychologists would like to answer cannot be pursued through experimental research because of ethical issues.

Case Studies and Naturalistic Observation

The field of developmental psychology has a rich history of using descriptive methods to explore change, growth, and stability in individuals over time. In a **case study**, a great amount of detail is gathered about one or more individuals of interest, to gain a thorough understanding of each person. At the end of a case study, we likely have a good sense of an individual's life and developmental history. The downside is that the insight we've gleaned is often applicable only to the subject of the case study. In other words, it does not have ecological validity because it does not generalize to people other than those being studied. Still, there are usually take-away findings that we may be able to generalize to the larger population. In one case study, Oliver Sacks discusses a man who suddenly began having trouble understanding what the familiar objects in his environment were—when he looked at his wife, for example, he gave his best guess that he was looking at a hat

rack. After extensive evaluation, Sacks determined that the man had developed visual agnosia—he had the ability to see but could not make sense of what he was looking at. If his wife spoke, or if he reached out and touched her, he knew instantly that it was her—his problem was only with visual recognition. Through his study and resulting case report, Sacks developed a detailed understanding of the underlying neurological problem, its development, and the likely course of the disease progression (Sacks, 1985, 2007).

The research method of **naturalistic observation** is the observation of research participants in real-life settings. If you want to understand how behavior occurs, one of the best ways to gain information is to simply observe the behavior in its natural context. For instance, if we wanted to study whether older adults benefit from playing video games, we might start by observing older adults in the recreational areas of an assisted living facility. The downside is that in true naturalistic observation, there is no control over the setting, and researchers are unable to interact with those being observed because people might change their behavior in unexpected ways if they know they are being observed. As an example, imagine that your instructor asks everyone in your class if they always wash their hands after using the restroom. Chances are that almost everyone in the classroom will raise their hand, but do you think hand washing after every trip to the restroom is really that universal?

An example of **structured observation**, a type of observation where people are observed while engaging in set, specific tasks, comes from the Strange Situation, developed by Mary Ainsworth. The Strange Situation is a procedure used to evaluate attachment styles that exist between an infant and caregiver. In this scenario, caregivers bring their infants into a room filled with toys. The Strange Situation involves a number of phases, including a stranger coming into the room, the caregiver leaving the room, and the caregiver's return to the room. The infant's behavior is closely monitored at each phase, but it is the behavior of the infant on being reunited with the caregiver that is most telling in terms of characterizing the infant's attachment style with the caregiver.

A benefit of naturalistic observation is the validity, or accuracy, of information collected unobtrusively in a natural setting. Having individuals behave as they normally would in a given situation means there is a higher degree of ecological validity, or realism, than might be gathered with other research approaches (like asking about handwashing instead of observing it). Therefore, the ability to generalize the findings of the research to everyday situations is enhanced. The power of naturalistic observation is to give the researcher ideas about what factors or variables may be relevant to include in a more structured research design later on. The major downside of naturalistic observation is that it is often difficult to set up and control. Another potential problem in observational research is observer bias. Generally, people who act as observers are closely involved in the research project and may unconsciously skew their observations to fit their research goals or expectations. To protect against this type of bias, researchers should have clear criteria established for the types of behaviors recorded and how those behaviors should be classified. In addition, researchers often compare observations of the same event by multiple observers, in order to test inter-rater reliability: a measure of reliability that assesses the consistency of observations by different observers.

Correlation: How Variables Relate

The next level of research beyond describing a psychological phenomenon is to begin to piece together how variables of your chosen topic might be related. The statistical technique used to determine the degree of relation or association between two or more variables is called **correlation**. While correlation means there is a relationship between two or more variables, this relationship does not necessarily imply cause and effect. When two variables are correlated, it simply means that as one variable changes, so does the other. We can measure correlation by calculating a statistic known as a correlation coefficient. You might notice that the word "correlation" includes the word "relation"—a helpful reminder that it represents variable relations.

A correlation coefficient is a number from –1.00 to +1.00 that indicates the strength and direction of the relationship between variables. The number portion of the correlation coefficient indicates the strength of the relationship. The closer the number is to 1 (be it negative or positive), the more strongly related the variables

are, and the more predictable changes in one variable will be as the other variable changes. The closer the number is to zero, the weaker the relationship, and the less predictable the relationship between the variables becomes. For instance, a correlation coefficient of 0.9 indicates a far stronger relationship than a correlation coefficient of 0.3. If the variables are not related to one another at all, the correlation coefficient is 0.

The sign—positive or negative—of the correlation coefficient indicates the direction of the relationship (Figure 1.19). A positive correlation means that the variables move in the same direction. Put another way, it means that as one variable increases so does the other, and conversely, when one variable decreases so does the other. A negative correlation means that the variables move in opposite directions. If two variables are negatively correlated, a decrease in one variable is associated with an increase in the other and vice versa. A helpful way to remember positive correlation is to think of two variables riding an elevator: the variables travel together, up or down. A negative correlation indicates the variables traveling in opposite directions, such as two friends waving at each other as they pass each other on escalators going in different directions: one goes up, the other goes down.

An example of positive correlations is the relationship between an individual's height and weight. Typically, someone who is taller will also weigh more than someone who is much shorter. One might expect a negative correlation to exist between someone's tiredness during the day and the number of hours they slept the previous night: the amount of sleep decreases as the feelings of tiredness increase. In a real-world example of negative correlation, student researchers at the University of Minnesota found a weak negative correlation ($r = -0.29$) between the average number of days per week that students got fewer than five hours of sleep and their GPA (Lowry et al., 2010). In other words, more sleepless nights was related to a lower GPA. Keep in mind that a negative correlation is not the same as no correlation. For example, we would probably find no correlation between hours of sleep and shoe size.

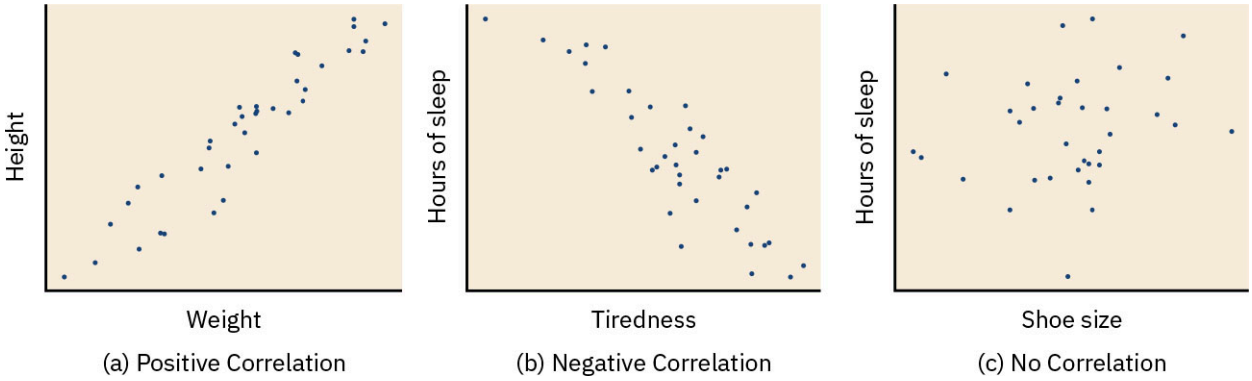


FIGURE 1.19 Scatterplots provide a graphical view of the strength and direction of correlations. The stronger the correlation, the closer the data points are to a straight line. In these examples, we see that there is (a) a positive correlation between weight and height, (b) a negative correlation between tiredness and hours of sleep, and (c) no correlation between shoe size and hours of sleep. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Correlational research is useful because it allows us to discover the strength and direction of relationships that exist between two variables. However, correlation is limited because establishing the existence of a relationship tells us little about cause and effect. While variables are sometimes correlated because one does cause the other, it could also be that some other factor, a confounding variable, is actually causing the systematic relationship between our variables of interest. Even when we cannot point to clear confounding variables, we should not assume that a correlation between two variables implies that one variable causes changes in another. This can be frustrating when a cause-and-effect relationship seems clear and intuitive.

Recall that often dozens of variables or factors are working together to produce even the simplest human behaviors. What this means in practical terms is that you could have two variables moderately correlated with one another, but a third one that's independently influencing the two variables you studied. This is called the

third variable problem. Take aggressive behavior and violent video game playing, for example. Correlational research shows an association between playing violent video games and acting out aggressively (e.g., Dickmeis, 2019). However, it's entirely possible that a third variable is related both to aggressive outbursts or separately to a preference for playing violent video games.

Unfortunately, people mistakenly make claims of causation as a function of correlations all the time. Such claims are especially common in advertisements and news stories. For example, research found that people who eat certain breakfast cereal may have a reduced risk of heart disease (Anderson et al., 2000). Cereal companies are likely to share this information in a way that maximizes and perhaps overstates the positive aspects of eating cereal. But does cereal really cause better health, or are there other possible explanations for the health of those who eat cereal? For example, consistent healthy dietary habits or exercise might better explain this association. While correlational research is invaluable in identifying relationships among variables, a major limitation is the inability to establish causality. Psychologists want to make statements about cause and effect, but the only way to do that is to conduct an experiment to answer a research question. The next section describes how scientific experiments incorporate methods that eliminate, or control for, alternative explanations, which allow researchers to explore how changes in one variable cause changes in another variable.

LINK TO LEARNING

Manipulate this interactive scatterplot (https://openstax.org/r/104Scatterplot) to practice your understanding of positive and negative correlation.

Experiments: Cause and Effect

The only way to establish a cause-and-effect relationship between two variables is to conduct a scientific experiment. Experiment has a different meaning in the scientific context than in everyday life. In everyday conversation, we often use it to describe trying something for the first time, such as experimenting with a new hair style or trying a new food. However, in the scientific context, an experiment has precise requirements for design and implementation.

The **experimental method**, a research design used to determine cause-and-effect relationships including specific design requirements, is a common tool psychological scientists use to investigate development and influences on that development. Some developmental psychologists will study people of a particular age, while others will run experiments across participants who span a variety of ages. The major strength of the experimental method is its ability to determine cause and effect relationships among variables. In one classic experiment, Condry and Ross (1985) tested the idea that knowing the gender of two children behaving aggressively would alter observers' rating of the aggressiveness of the interaction. By altering the gender label attached to video footage of two children engaged in a snowball fight and changing nothing else, the researchers showed that young adult participants rated the boy-boy interaction as least aggressive. The authors concluded that the perception of aggression in children is influenced by observer's different expectations of the behavior of boys and girls. (The finding supports the theory of gender-schema theory [Bem, 1981], the notion, which is discussed later, that we form different associations and expectations based on gender categories from an early age.)

In this example, we have all the primary ingredients of the experimental method. First, the experiment is based on a theory (the overarching explanation for a set of observations). The theory generates one or more hypotheses (theory-based predictions that are testable). In our example, the hypothesis was that the gender of the observed children would make for different perceptions of aggressiveness. In order to test this hypothesis, or prediction, the researchers created different conditions, or levels, of an **independent variable**, the variable that is altered in an experiment and is expected to be the *cause* or influence of some outcome behavior. In fact, the resulting outcome behavior that is measured in an experiment is called the **dependent variable**, because

values of this variable are determined by, or dependent upon, the value of the independent variable. In the study by Condry and Ross (1985), there were four conditions, or levels, of the independent variable: boy-boy, boy-girl, girl-boy, and girl-girl. Note that the gender label was the only thing the researchers altered: in all four conditions, the same video footage was used, and only the gender labels were different.

Participants (those watching videos) were randomly assigned to view one of the four conditions. A **random assignment** means each participant has an equal chance of being placed in each condition. In fact, random assignment is an essential aspect of the experimental method; without it, you may end up with disproportionate number of male participants in one condition and few in another. Random assignment ensures an even distribution of all relevant participant characteristics across all experimental conditions. After observing the assigned video footage, participants in each condition were then asked to rate one of the children along a variety of characteristics, including how aggressively they behaved. The researchers then compared the average ratings of aggressiveness across the four conditions to see whether their prediction was accurate.

The experimental method is the only research method that allows a psychological scientist to conclude that changes in one variable (in this case, gender label) caused changes in another (perception of aggression). The reason this conclusion is valid, or an accurate statement of the facts, is that the researchers have carefully manipulated the situation to alter only the variable of interest, and they used random assignment of the raters to neutralize all other relevant factors that could have contributed to the observed outcome. Without random assignment, other variables might explain the observed differences in ratings of the children's aggressiveness. For instance, if the researchers let the first ten participants who showed up watch the same video segment, by happenstance, these might have all been members of the college football team and that might bias their ratings. Instead, random assignment gave each participant an equal chance to observe each possible labeled video clip.

The ability to pinpoint cause-and-effect relationships among two or more variables comes from careful control of the situation, but it does have one potential drawback. Because the experimental scenario is so carefully controlled, the question of artificiality arises. That is, how closely does the experimental scenario match naturally occurring relevant scenarios outside the psychologist's laboratory? This question examines the characteristic called **external validity**, the degree to which an experiment's results and reality match. Low external validity, on the other hand, is a significant threat to the applicability of laboratory findings to the everyday world. After all, if the experimental setup is so contrived that it doesn't match any situation you might normally encounter, then the value or utility of the finding is in question. What can we do with a research finding that doesn't apply in everyday life? In our example from Condy and Ross (1985), external validity would appear to be high, because the experimental setup used video footage of actual children engaged in a snowball fight. We may not always know the gender of the children involved in every such encounter, but when we do, we can expect that information to inform our judgments.

Other drawbacks of the experimental method include the potential cost and time it might take to devise an experiment to test certain topics. In fact, it is not possible, feasible, or sometimes even ethical to test some topics with the experimental method. For example, for both practical and more importantly ethical reasons, a researcher interested in studying the effects of divorce on adolescent development couldn't randomly assign adolescents to different conditions of the independent variable—in this case, whether parents divorce or not. For important topics such as these, psychologists have to wait for conditions to arise through the natural course of life events—this is called a **quasi-experimental design**.

Because researchers in a quasi-experiment can't randomly assign participants to the conditions, they lose a considerable amount of control as other variables enter the picture. Perhaps families that experience divorce have a lower household income on average. Or perhaps those who do *not* experience divorce have a higher tendency to belong to a religion that forbids divorce. These and many other variables could make for meaningful ways that the "divorce" and "no divorce" conditions vary in a natural or quasi-experiment, making

it very difficult to establish a clear cause-and-effect relationship between divorce itself and adolescents' psychological outcomes. However, as noted, a quasi-experiment is the only way to investigate some topics.

Time as a Variable

Developmental psychology has designed some additional research approaches specific to the fundamental questions of the field and focused on understanding growth and change in individuals over time. To do this, researchers often employ the cross-sectional or longitudinal method, or the cross-sequential design, which combines the advantages of both. All three designs can be used with correlational, experimental, case study and naturalistic observation methods.

Longitudinal Design

A **longitudinal design** studies a group of participants over a period of time, re-assessing them at various points. If we are interested in the development of friendships during adolescence, we might recruit a group of fifty sixth-grade students. We would give them a personality inventory, collect background information about each, and ask them to complete surveys about their friendships. Then, we would find these same fifty participants at six-month or one-year intervals, re-assessing the same information. At the end of five or six years, we'd have a rich data set and a really good idea about how the number, type, and quality of friendships change across adolescence.

Often longitudinal studies are employed when researching various diseases in an effort to understand particular risk factors. Such studies often involve tens of thousands of individuals who are followed for several decades. Given the enormous number of people involved in these studies, researchers can feel confident that their findings can be generalized to the larger population. The Cancer Prevention Study-3 (CPS-3) is one of a series of longitudinal studies sponsored by the American Cancer Society aimed at determining predictive risk factors associated with cancer. When participants enter the study, they complete a survey about their lives and family histories, providing information on factors that might increase or decrease the risk of developing of cancer. Then every few years the participants receive additional surveys to complete. In the end, hundreds of thousands of participants will be tracked over twenty years to determine which of them develop cancer and which do not. Clearly, this type of research is important and potentially very informative. For instance, earlier longitudinal studies sponsored by the American Cancer Society provided some of the first scientific demonstrations of the now well-established links between increased rates of smoking and cancer (American Cancer Society, n.d.).

As with any research strategy, longitudinal research is not without limitations. For one, these studies require an incredible time investment by the researcher and research participants. Given that some longitudinal studies take years, if not decades, to complete, the results will not be known for a considerable period of time. Research participants must also be willing to continue their participation for an extended period of time, and this can be problematic. People move, get ill, and eventually die. Even without significant life changes, some people may simply choose to discontinue their participation in the project. This is known as **attrition**, the gradual loss or dropping out of participants from the original pool. Another issue is test familiarity, known as practice effects. Since participants are given the same battery of measures including surveys multiple times, they might get used to the questions, which could alter the way they think about and respond to them.

Finally, and this is the most serious challenge in longitudinal research, the longer the study duration, the higher the risk of encountering cohort effects. This means that the research results, which in our hypothetical study would take five or six years to obtain, might end up being limited in their applicability beyond a certain cohort. What if, toward the end of the study, a new virtual reality app was released that changed how teenagers communicate with each other? That would make our findings, and the six years of work that went into producing them, of limited value and possibly obsolete. Nevertheless, a longitudinal design comes closest to observing change within individuals over time, making this a highly valid and valuable approach.

LINK TO LEARNING

View this TED talk featuring the longest-running study that has followed the life trajectories of thousands of British children for the past seventy years (https://openstax.org/r/104Trajectory) and learn about the study's major findings.

Cross-Sectional Design

The cross-sectional design is a more common developmental research design and it offers solutions for most of the drawbacks we mentioned with longitudinal designs. A **cross-sectional design** studies groups of participants of different ages, that is, multiple segments of the population at a given time. In our friendship example, researchers would identify a group of twelve-year-olds, fourteen-year-olds, sixteen-year-olds and eighteen-year-olds and assess them all on a variety of measures. Thus, they would have results suggesting the developmental progression of friendship type and quality across adolescence in a very short time, possibly a few months as opposed to six years. Attrition is not an issue, nor are practice effects because all the participants are recruited and assessed at just one point in time.

One drawback of the cross-sectional approach is its inability to track individual development. Instead, researchers compare different age groups at a single point in time. To understand how development unfolds, researchers must infer the sequence of changes by piecing together data from these different age groups. Finally, with a cross-sectional design, you could still have cohort effects, especially in studies that use a larger range of age groups than in our example. In other words, people who are ten years old today have likely experienced all sorts of historical and environmental events that shaped them as individuals and that are different from the experiences of those who are now twenty and thirty years old. Those different events might be the source of any observed differences among the age groups.

Cross-Sequential Design

A **cross-sequential design**, sometimes called sequential design, combines the benefits of both cross-sectional and longitudinal designs. As in the cross-sectional design, groups of participants of different ages are recruited. However, instead of being assessed once, these participants are followed for a period of time, although usually much shorter than in a longitudinal study. For example, one child development study measured changes in the brain's executive functioning across middle childhood. To better understand how children's ability to use working memory and inhibition changes across development, the study began with three age groups (5, 7, & 9 year olds) and then had all the age groups continue to participate one year later (Rollins & Riggins, 2017). Of course, it's still possible for practice effects to occur, but with care these can be minimized. Table 1.4 summarizes the effectiveness of different research designs for studying different topics common in developmental psychology.

Research Area	Longitudinal Design	Cross-sectional Design	Cross-sequential Design
Individual development	Strong	Weak	Moderate
Development is normative for age	Strong	Strong	Strong
Tracking from early life events to later life events	Strong	Weak	Moderate

TABLE 1.4 Effectiveness of Research Designs for Different Areas of Study

Research Area	Longitudinal Design	Cross-sectional Design	Cross-sequential Design
Change versus stability	Strong	Weak	Moderate
Historical or cohort data	Weak	Strong	Moderate

TABLE 1.4 Effectiveness of Research Designs for Different Areas of Study

Ethics in Psychology Research

While many science-based disciplines are able to conduct research with materials or theoretical calculations (such as a chemist in a lab or a physicist planning a space trajectory), developmental psychology mostly relies on humans and other animals as research participants. Given that, special considerations enter into the ethical code of conduct for such research (APA, 2024). Today, scientists agree that good research is ethical in nature and is guided by a basic respect for human dignity and safety.

Any research institution that receives federal support for research involving human participants must have access to an institutional review board (IRB). The IRB is a committee of individuals often made up of members of the institution's administration, scientists, and community members. The purpose of the IRB is to review proposals for research that involves human participants. The IRB reviews these proposals with the preceding principles mentioned in mind, and generally, approval from the IRB is required in order for the experiment to proceed.

Research Using Human Subjects

The Society for Research in Child Development (SRCD, 2021) provides a code of conduct for developmental research that includes the following principles and protections:

- *Competence*. Researchers should be appropriately trained and knowledgeable about their research participants' cultural and social backgrounds and seek to eliminate any personal biases that might influence their research Participants donate their time, energy, and personal aspects of themselves when they agree to be studied. Researchers show participants respect and gratitude by acting with scientific integrity and interpersonal sensitivity.
- *Informed consent*. Obtaining **informed consent** is a two-part process.
    1. Participants need to be fully informed of the purpose of the study, what will be required of them, potential risks including any harm, and the anticipated benefits to science and themselves from the study.
    2. Participants must give permission. Adults can give consent only when they have been fully informed, and children do so only under the guidance of a parent or guardian. Although a child cannot give legal consent, they can give assent and express their desire to participate or not. For example, if a baby is happy and comfortable a study may continue with assent and consent. However, if a baby is crying and uncomfortable, the research should assume the child does not consent and end the study. A key part of consent is voluntariness. There should be no coercion, and participants should be free to end their participation in the study at any time. Researchers are ethically bound to ensure the participant knows this and will end the study if requested without coercion.
- *Equity*. Research should seek to identify and address developmental inequities and disparities wherever possible. Part of achieving this is being culturally sensitive and informed.
- *Scientific integrity*. All of the ethical standards operating in scientific investigation are also relevant and applicable to developmental research. Research findings, methodology, and data should be transparent and shared whenever possible for review by peers. Deception should be minimized, and participants should be debriefed (informed about the pertinent details) at the conclusion of the study. Participant

information and data should be private.

- *Balance of risk and benefit.* Researchers should avoid harm, minimize risk, and weigh any risks against the possible benefits of conducting the research. They should assure participants of the confidentiality of all components of their participation.
- *Dynamic assessment.* If researchers uncover an unanticipated harm or other issue during the study, they should alter or discontinue the study.

These guidelines help ensure that a high degree of integrity is built into scientific research, with extra precautions taken to protect the personal integrity of participants. Developmental science research is difficult, meticulous work undertaken with great care and planning. The results provide benefit as we discover in ever more nuanced detail how humans grow and change and maintain stability over the course of the lifespan, a body of knowledge intended to help us understand one another more fully and better affect positive change in our social world.

INTERSECTIONS AND CONTEXTS

Ethics and the Tuskegee Syphilis Study

Unfortunately, the ethical guidelines that exist for research today were not always applied in the past. In 1932, rural, Black men from Tuskegee, Alabama, were recruited to participate in an experiment conducted by the U.S. Public Health Service, with the aim of studying syphilis in Black men Figure 1.20. In exchange for free medical care, meals, and burial insurance, 600 men agreed to participate in the study. A little more than half of the men tested positive for syphilis, and they served as the experimental group (given that the researchers could not randomly assign participants to groups, this represents a quasi-experiment). The remaining syphilis-free individuals served as the control group. However, those individuals who tested positive for syphilis were never informed that they had the disease.

FIGURE 1.20 A participant in the Tuskegee Syphilis Study receives an injection. Why is this study unethical? How were the men who participated and their family members harmed as a function of this research? (credit: modification of work “Tuskegee-syphilis-study doctor-injecting-subject” by National Archives Atlanta, GA/ Wikimedia Commons, Public Domain)

While there was no treatment for syphilis when the study began, by 1947 penicillin was recognized as an effective treatment for the disease. Despite this, no penicillin was administered to the participants in this study, and the participants were not allowed to seek treatment at any other facilities if they continued in the study. Over the course of forty years, many of the participants unknowingly spread syphilis to their spouses and sexual partners (and subsequently children born from those relationships), and many participants eventually died because they never received treatment for the disease. This study was discontinued in 1972 when the experiment was discovered by the national press (Tuskegee University, n.d.). The resulting outrage over the experiment led directly to the National Research Act of 1974 and strict ethical guidelines for research on humans.

Research Using Animal Subjects

Many psychologists conduct research involving animal subjects. Often, these researchers use rodents (Figure 1.21) or birds as the subjects of their experiments—the APA estimates that 90 percent of all animal research in psychology uses these species (APA, n.d.). Because many basic processes in animals are sufficiently similar to those in humans, these animals are often considered acceptable substitutes for research that would be considered unethical in human participants.

FIGURE 1.21 Rats, like the one shown here, often serve as the subjects of animal research. (credit: "Wistar rat" by Janet Stephens/Wikimedia Commons, Public Domain)

This does not mean that animal researchers are immune to ethical concerns. Indeed, the humane and ethical treatment of animal research subjects is a critical aspect of this type of research. Researchers must design their experiments to minimize any pain or distress experienced by animals serving as research subjects.

Whereas IRBs review research proposals that involve human participants, animal experimental proposals are reviewed by an Institutional Animal Care and Use Committee (IACUC). An IACUC consists of institutional administrators, scientists, veterinarians, and community members. This committee is charged with ensuring that all experimental proposals require the humane treatment of animal research subjects. It also conducts semi-annual inspections of all animal facilities to ensure that the research protocols are being followed. No animal research project can proceed without the committee's approval.

Scientific Literacy

Knowing more about the scientific process, methods, and ethics can help you to become more informed about how to interpret information you may come across. It can also help you to learn more about how to apply science to thriving in your own life. Trying to determine which theories are and are not accepted by the scientific community can be difficult, especially in an area of research as broad as psychology. More than ever before, we have an incredible amount of information at our fingertips, and a simple internet search on any given research topic might result in a number of contradictory studies. In these cases, we are witnessing the scientific community going through the process of reaching a consensus, and it could be quite some time before a consensus emerges.

In the meantime, we should strive to think critically about the information we encounter by exercising a degree of healthy skepticism. When someone makes a claim, we should examine the claim from a number of different perspectives: what is the expertise of the person making the claim, what might they gain if the claim is valid, does the claim seem justified given the evidence, and what do other researchers think of the claim? This is especially important when we consider how much information in advertising campaigns and on the internet claims to be based on "scientific evidence" when in actuality it is a belief or perspective of just a few individuals trying to sell a product or draw attention to their perspectives.

We should be informed consumers of the information made available to us because decisions based on this information have significant consequences. One such consequence can be seen in politics and public policy. Imagine that you have been elected as the governor of your state. One of your responsibilities is to manage the state budget and determine how to best spend your constituents' tax dollars. As the new governor, you need to

decide whether to continue funding early intervention programs. These programs are designed to help children who come from low-income backgrounds, have unique needs, or face other disadvantages. These programs may involve providing a wide variety of services to maximize the children's development and position them for optimal levels of success in school and later in life (Blann, 2005). While such programs sound appealing, you would want to be sure that they also proved effective before investing additional money in them. Fortunately, psychologists and other scientists have conducted vast amounts of research on such programs and, in general, the programs are found to be effective (Neil & Christensen, 2009; Peters-Scheffer et al., 2011). While not all programs are equally effective, and the short-term effects of many such programs are more pronounced, there is reason to believe that many of these programs produce long-term benefits for participants (Barnett, 2011). If you are committed to being a good steward of taxpayer money, you would want to look at research. Which programs are most effective? What characteristics of these programs make them effective? Which programs promote the best outcomes? After examining the research, you would be best equipped to make decisions about which programs to fund.

LIFE HACKS

Evaluating Information Sources

Every day, we are flooded with information from a variety of sources. Your uncle sends you a link to a news story about the rise of violent crime in your city. A friend shares a social media post about a quick way to build muscle. A blog you follow claims inflation is the highest it's ever been, while *The New York Times* says the economy has recovered and shows signs of strength. How do you evaluate these various claims? Which can you trust and act on? Since none of us are experts in all these fields, we rely on information shared by others daily. Are there strategies for efficiently doing so?

First, consider how people assess information. We're more likely to believe messages from a social group we belong to, respect, or identify with (APA, 2023). Trustworthiness also grows through repetition. The more times we hear something, whether true or not, the more likely we are to believe it (which is how advertising works). We are also motivated to believe what we hear when aroused by fear or other heightened emotions. Taken together, these yardsticks raise the possibility of trusting false information.

One key strategy to assess the trustworthiness of information is to examine the source. Following are some general considerations (Kington et al., 2021):

- Is the information based on science? A community of scientists across hundreds of disciplines and around the world adhere to the principles of the scientific process. Scientific reports rely on the consensus and peer review of experts and are open to correction based on any new information that challenges it. xx
- Have the authors and/or publisher of the information acknowledged up front any political, financial, or even ideological interests they may have? If so, this disclosure helps you assess their trustworthiness. The "About Us" section on a website is a great way to learn this information.
- Is the information as applicable and accurate as it can be? In the United States and Canada, for example, legal, ethical, and practical considerations mean that information coming from *.gov and *.ca (respectively) are oftentimes trustworthy. Educational and non-profit institutions are another good source of information. These operate under public visibility and scrutiny, and their scholars are guided by scientific principles. Trustworthy sources in non-profit agencies include government think tanks, news organizations, professional associations of experts, foundations, and advisory panels to government agencies.

As scientists who study human change and growth across the lifespan, developmental researchers often have application as their primary goal when researching a topic. So, although developmental psychology examines answers to philosophical questions like "What does it mean to have a meaningful life?" ultimately, this is a field concerned with the practical. Developmental psychology is composed of many publications over several

decades and from researchers across the globe. The theories and findings you learn about across this course often make use of a wide range of research methods, designs, and statistical analyses using many different groups of people. Researchers also use different tools before coming to a scientific consensus, including things like neurological measures (e.g., MRI, fMRI, & EEG), physiological measures (e.g., heart rate), observations of individuals or families (e.g., behavioral), and psychological measures (e.g., surveys and self-reports). By putting all of these together we can begin to form a more complete picture of human life.

One practical example of developmental psychology's contribution to society is the shift away from corporal punishment of children to promote healthier parent- child relationships (Gershoff, 2002). This study used a meta-analysis, a way of combining many different research studies to test a hypothesis, to demonstrate that corporal punishment is not beneficial to children. In this course, you will learn about many historical findings, current studies, and topics that need further research as developmental psychologists strive to make contributions that impact our everyday lives.

References

American Cancer Society. (n.d.). History of the cancer prevention studies. http://www.cancer.org/research/researchtopreventcancer/history-cancer-prevention-study

American Psychological Association. (2023, November). *Using psychological science to understand and fight health misinformation.* https://www.apa.org/pubs/reports/health-misinformation

American Psychological Association. (2024). Ethical principles of psychologists and code of conduct. https://www.apa.org/ethics/code

Anderson, J. W., Hanna, T. J., Peng, X., & Kryscio, R. J. (2000). Whole grain foods and heart disease risk. *Journal of the American College of Nutrition, 19*(sup3), 291S–299S. https://doi.org/10.1080/07315724.2000.10718963

Barnett, W. S. (2011). Effectiveness of early educational intervention. *Science, 333*(6045), 975–978. https://doi.org/10.1126/science.1204534

Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review, 88*(4), 354–364. https://doi.org/10.1037/0033-295X.88.4.354

Blann, L. E. (2005). Early intervention for children and families: With special needs. *MCN: The American Journal of Maternal/Child Nursing, 30*(4), 263–267. https://doi.org/10.1097/00005721-200507000-00011

Condry, J. C., & Ross, D. F. (1985). Sex and aggression: The influence of gender label on the perception of aggression in children. *Child Development, 56*(1), 225–233. https://doi.org/10.2307/1130189

Dickmeis, A., & Roe, K. (2019). Genres matter: Video games as predictors of physical aggression among adolescents. *Communications, 44*(1), 105–129. https://doi.org/10.1515/commun-2018-2011

Fiedler, K. (2004). Illusory correlation. In R. F. Pohl (Ed.), *Cognitive illusions: A handbook on fallacies and biases in thinking, judgment and memory* (pp. 97–114). Psychology Press. https://doi.org/10.4324/9780203720615

Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychological Bulletin, 128*(4), 539–579. https://doi.org/10.1037/0033-2909.128.4.539

Jenkins, J. S. (2001). The Mozart effect. *Journal of the Royal Society of Medicine*, 94(4), 170–172. https://doi.org/10.1177/014107680109400404

Kington, R. S., Arnesen, S., Chou, W. S., Curry, S. J., Lazer, D., & Villarruel, A. M. (2021). Identifying credible sources of health information in social media: Principles and attributes. *NAM Perspectives, 2021*. https://doi.org/10.31478/202107a

Lowry, M., Dean, K., & Manders, K. (2010). The link between sleep quantity and academic performance for the college student. *Sentience: The University of Minnesota Undergraduate Journal of Psychology, 3*(Spring), 16–19. http://www.psych.umn.edu/sentience/files/SENTIENCE_Vol3.pdf

Neil, A. L., & Christensen, H. (2009). Efficacy and effectiveness of school-based prevention and early intervention programs for anxiety. *Clinical psychology review, 29*(3), 208–215. https://doi.org/10.1016/j.cpr.2009.01.002

Peters-Scheffer, N., Didden, R., Korzilius, H., & Sturmey, P. (2011). A meta-analytic study on the effectiveness of comprehensive ABA-based early intervention programs for children with autism spectrum disorders. *Research in Autism Spectrum Disorders, 5*(1), 60–69. https://doi.org/10.1016/j.rasd.2010.03.011

Pietschnig, J., Voracek, M., & Formann, A. K. (2010). Mozart effect–Shmozart effect: A meta-analysis. *Intelligence, 38*(3), 314–323. https://doi.org/10.1016/j.intell.2010.03.001

Rauscher, F. H. (1993). Music and spatial task performance. *Nature 365*, 611. https://doi.org/10.1038/365611a0

Rauscher, F. H., Shaw, G. L., & Ky, C. N. (1995). Listening to Mozart enhances spatial-temporal reasoning: Towards a neurophysiological basis. *Neuroscience Letters 185*(1), 44–47. https://doi.org/10.1016/0304-3940(94)11221-4

Rollins, L., & Riggins, T. (2017). Cohort-Sequential study of conflict inhibition during middle childhood. *International Journal of Behavioral Development*, *41*(6), 663–669. https://doi.org/10.1177/0165025416656413

Rotton, J., & Kelly, I. W. (1985). Much ado about the full moon: A meta-analysis of lunar-lunacy research. *Psychological Bulletin, 97*(2), 286–306. https://doi.org/10.1037/0033-2909.97.2.286

Sacks, O. (1985). *The man who mistook his wife for a hat and other clinical tales*. Summit Books.

Sacks, O. (2007). A neurologists notebook: The abyss, music and amnesia. *The New Yorker.* http://www.newyorker.com/reporting/2007/09/24/070924fa_fact_sacks?currentPage=all

Society for Research on Child Development. (2021, March 28). *Ethical principles and standards for developmental scientists.* https://www.srcd.org/about-us/ethical-principles-and-standards-developmental-scientists

Key Terms

application process of translating evidence-based research and ideas into practical solutions to influence and improve human life

associative learning learning process in which the repeated presentation of two stimuli results in the linking of the two stimuli, making the meanings synonymous

attachment enduring, emotionally significant bond that forms between two individuals, often in a caregiving context

attrition gradual loss or dropout of participants from your original pool

behavioral genetics field of inquiry most directly concerned with exploring the intersection between nature and nurture, with an aim toward determining the degree to which behavior and development are driven by genetic influences

behaviorist perspective perspective, also known as learning theory, that focuses on the role the environment plays in influencing behavior and behavioral change.

case study investigation where a great amount of detail is gathered about one or more individuals of interest with the aim of gaining a thorough understanding of each person

child study movement social and historical consensus that combined several interests to focus the scientific community's interest on child development

chronosystem idea that all other contexts within the ecological systems model are moving and changing through historical time

classical conditioning learning process whereby a previously neutral or meaningless stimulus, via accidental or intentional pairing with a natural stimulus takes on the same meaning for the learner as the natural stimulus

cohort effect idea that people live, interact and develop within a similar time period

conditioned stimulus previously neutral or meaningless stimulus (an environmental trigger)

continuous development gradual day-by-day or week-over-week progression of change

correlation statistical technique used to determine degree of relation or association among two or more variables

critical period developmental age range in which certain experiences are required for the development of a psychological or physical ability

cross-sectional design type of developmental research where groups of participants composed of different ages are studied at a single point in time

cross-sequential design type of developmental research that combines the benefits of both cross-sectional and longitudinal designs

culture set of adaptations to the physical and social world that have shared meaning for a group and are transmitted across generations

dependent variable resulting outcome behavior that is measured in an experiment; depends on another variable

discontinuous development changes in kind, form or degree that do not directly follow from what came before

ecological systems model proposes that a person's development is shaped by different layers of their environment, from their immediate family and friends to their broader culture and society

epigenetics process by which environmental influences can modify an individual's genetic expression

ethnicity one's cultural and/or national heritage

ethnoracial term combining the elements of race and ethnicity

ethology study of animal behavior

evolutionary psychology looks to the theory of natural selection to explain the emergence, development and persistence of various psychological characteristics in humans

exosystem social and physical settings (contexts) in the ecological systems model that indirectly impact the developing individual and are even further removed from the immediate experience or even knowledge of

the individual

experimental method research design used to determine cause-and-effect relationships including specific design requirements

external validity degree to which an experiment's results and reality match

gender ideas society has about the roles, attitudes and behaviors associated with one's sex assignment

gender identity an individual's psychological sense of their gender, including ideas about masculinity, femininity, non-binary and other dimensions

gene-environment correlation the complex interplay between our genes and the environments we experience in contributing to development

generalizability the extent to which findings from a specific study or context can be applied to other populations or settings

heritability estimate extent to which a genetic component explains difference

human development scientific perspective that incorporates a multidisciplinary approach to understanding the development process

hypothesis testable prediction about how the world will behave if our idea is correct; often worded as an if-then statement

independent variable variable that is altered in an experiment and is expected or implied to be the cause of or influence some outcome behavior

informed consent process whereby study participants are fully informed of the purpose of the study, what will be required of their participation, potential risks, including any harms, and what the benefits to science and themselves are anticipated to be

kinship study method of studying naturally-occurring variation in genetic similarities of individuals and comparing that information with what we know about the degree of similarity or dissimilarity in the environments of these same individuals

lifespan development scientific study of growth, change and stability in humans from conception until death

longitudinal design type of developmental research where a group of participants are followed over a period of time, and reassessed at various points

macrosystem set of contexts in the ecological systems model that contain all the beliefs and ideologies of one's culture

maturation growth and change in an individual based on underlying biological processes

mesosystem interactions in the ecological systems model between the microsystem contexts that do not directly involve the developing individual

microsystem distinct contexts (environmental settings) in the ecological systems model wherein individual development occurs via direct interaction

naturalistic observation observation of research participants in real-life settings

nature and nurture psychologists' way of recognizing that most development has both genetic (nature) and environmental (nurture) sources of influence

normative identification of typical or expected developments across the lifespan

observational learning set of principles that outline the way in which learning can occur through the social act of observing others who are themselves undergoing learning

operant conditioning learning process whereby feedback from the environment shapes an individual's behavior

private speech self-talk, in particular to guide progress on a difficult task

psychology scientific study of the mind and all the behavior it produces

psychosocial crisis age-based developmental challenge posed by society

psychosocial theory of development theory that views human development occurring in stepwise fashion as a result of resolving age-graded challenges posed by the social environment

punishment process of applying a consequence that has as its effect the decreased frequency of that behavior

quasi-experimental design research method that seeks to determine the relationship between independent and dependent variables by studying conditions as they arise through the natural course of life

race socially constructed concept that is a highly variable mix of physical characteristics, heritage, culture of origin, and self and other identification

random assignment process whereby each participant has an equal chance of being placed in each condition

reaction range idea that for many of our characteristics, our genes likely set parameters such as minimal and maximum levels of particular traits, behaviors or abilities, as well as how sensitive the development of these are to environmental forces

regression process of moving backward to an early stage or lower capability

reinforcement process of applying a consequence that has as its effect the increased frequency of that behavior

reliability consistency and reproducibility of a given result

religion formal system of beliefs, values, and practices organized around the worship of a higher being or power

religiosity religious behaviors, such as praying, giving money to a place of worship or religious organization, and being active within a religious community

representative sample sample of participants that accurately reflects, or represents, the group of people we are making conclusions about

resilience an individual's capacity for and "process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress" (APA, 2014)

scaffolding helping learners achieve beyond their current level, with a gradual withdrawing of such support

sensitive period age range when the development of a characteristic is particularly open to inputs and influences from the environment

sex one's assignment as male, female, or intersex based on one's biological anatomy and physiology

sexual orientation includes sexual identity, sexual behavior, and sexual attraction, or to whom someone is sexually attracted

shaping learning process where successive approximations of a desired target behavior are reinforced thereby producing progressively more complex behavior

society recognized group of people who live within a formal system of rules and institutions

sociocultural theory of cognitive development view of cognitive development that emphasizes the embeddedness of the development of thinking abilities within the social and cultural context of the individual

socioeconomic status (SES) measure of one's position in society and level of access to resources

spirituality individual's personal search for the sacred

stability state in which characteristics and abilities remain the same or function similarly across broad portions of the lifespan

stage theory explanation for brief periods of rapid development following longer stretches of stability

stage theory of cognitive development theory that children's thinking skills change in distinct steps or stages as they grow, with each stage building on the previous one

structured observation type of observation where people are observed while engaging in set, specific tasks

theory well-developed set of ideas that propose an explanation for observed phenomena

third variable problem idea that another variable, one you did not measure, is what is actually independently influencing the two variables you did study

twin study type of kinship study in which the correspondence between the genetic relatedness of twins specifically (both identical and fraternal) and resulting psychological characteristics are examined

unconditioned stimulus environmental trigger that has inherent meaning that does not have to be learned

validity accuracy of a given result in measuring what it is designed to measure

zone of proximal development (ZPD) notion that there are concepts and ideas just beyond our current abilities that we are ready to learn and master, if only we had a little help, often in the form of others

Summary

1.1 Psychology and Human Development

- Lifespan development is a subfield of the discipline of psychology; human development adds a multidisciplinary approach to the study of the lifespan.
- The study of lifespan development extends back to the ancient Greeks, through the Child Study Movement in the early 1900s, to today.
- Lifespan development as a scientific discipline is concerned with application—taking findings and putting them to use in people's lives.

1.2 Themes of Development

- Lifespan development is especially interested in the timing of developmental events and their impact on development.
- Depending on the topic, development can occur continuously (smooth and gradual) or discontinuously (abrupt or sudden).
- Lifespan development addresses the nature and nurture question, which explores the sources of developmental change and the relative contributions of genetics and the environment.
- Critical periods are times when an experience is expected and necessary for development to occur. Sensitive periods are windows of time when certain experiences can lead to an individual's ideal development.

1.3 Major Theories and Theorists

- Lifespan psychologists use many different theoretical perspectives to study development, including cognitive, biological and evolutionary, and behaviorist perspectives.
- Our understanding benefits from the overlap of these perspectives—that is, the theories do not necessarily compete with one another, but instead complement one another, leading to a more complete and holistic understanding of development.
- The perspectives have a range of emphasis from the biological to the environmental; each perspective has a view on the nature and nurture question.
- The behaviorist perspective has helped scientists identify important learning and behavior concepts including classical conditioning, operant conditioning, and observational learning.
- Theories from the cognitive perspective that have helped us understand various facets of development include psychosocial theory of development, stage theory of cognitive development, sociocultural theory of cognitive development, and information processing theory.

1.4 Contexts and Settings of Development

- The study of the individual across the lifespan has benefitted from an ecological systems model in which each system is made up of contexts (distinct environments) in which development can be influenced.
- Psychological research findings are often broken down and further analyzed by social sub-groupings including gender, sexual orientation, ethnoracial background, socioeconomic status, culture, and religion.
- A major concern for the field of lifespan development is to be more aware of the universality and generalizability of its research, and to make findings as applicable as possible to people from around the world. Criticism of research centered on participants exclusively from Western, Educated, Industrialized, Rich, and Democratic societies is summarized in the acronym "WEIRD."

1.5 Lifespan Development as a Science: Research Methods

- Psychological science has many scientific tools to explore developmental questions.
- These tools include naturalistic observation, case studies, correlational studies, experiments, natural experiments, and topic-specific apparatuses.
- Developmental researchers can choose a number of developmental research designs—cross-sectional,

longitudinal, and cross-sequential.

- Ethical considerations guide all scientific research, especially when studying humans. A set of ethical principles operates in developmental research.
- Informed consent is a key requirement for psychological research.

Review Questions

1. Karim is thirty-five years old and trying to learn a third language. It is very difficult and Karim wonders whether it is even possible. What key question in developmental psychology is most related to Karim's situation?
   a. What kinds of changes can we typically expect across the lifespan?
   b. Are there particular points in time across the lifespan where certain experiences are essential to development?
   c. What are the ideal environments for people to develop and flourish in? Are they different for everyone?
   d. How does an individual experience and respond to expectations from their social and cultural environments at various points in their life?

2. A high school teacher is teaching students about memory skills. What area of study within developmental psychology is this?
   a. cognitive
   b. psychosocial
   c. sociocultural
   d. biological

3. An economist publishes a study on the benefits to children of participating in a universal pre-kindergarten program. What field or perspective does this scholar's contribution best represent?
   a. psychology
   b. behavioral economics
   c. lifespan development
   d. human development

4. William's grandmother is very outgoing. She notices that William likes to strike up conversations whenever they run errands, so she makes an effort to plan such trips around his schedule so he can go with her. What concept is illustrated in this scenario?
   a. epigenetics
   b. reaction range
   c. gene-environment correlation
   d. sensitive period

5. Every day it seems three-year-old Sasha learns at least five new words. What concept does this most clearly illustrate?
   a. discontinuous development
   b. continuous development
   c. the influence of nature
   d. the influence of nurture

6. Jason is thirteen years old. His baseball coach advises him to be on the lookout for a sudden growth spurt and to work out regularly when these changes begin to happen. What concept is the coach trying to take advantage of?
   a. sensitive period

b. critical period
c. stability
d. reaction range

7. Which two theorists both proposed stage theories?
a. Vygotsky, Bowlby
b. Bandura, Freud
c. Skinner, Pavlov
d. Piaget, Erikson

8. Which theory is most heavily focused on the role of the environment in development of certain behaviors?
a. Piaget's theory of cognitive development
b. Skinner's theory of operant conditioning
c. Vygotsky's sociocultural theory
d. Bandura's social learning theory

9. What do the theories of Erikson and Vygotsky have in common?
a. Both emphasize the social aspect of development.
b. Both study children's responses to questions.
c. Both are stage theories based on continuous development.
d. Both focus on cognitive development.

10. Which term best summarizes the contextual perspective of development?
a. adaptive
b. individualistic
c. interconnected
d. discontinuous

11. A child's volleyball coach communicating with the child's caregiver is an example of which system in the ecological system model?
a. microsystem
b. mesosystem
c. macrosystem
d. exosystem

12. Which of the following is an example of a cohort?
a. Many commuters get stuck in terrible traffic during a downpour in their city.
b. When both parents have blue eyes, there is a great chance of their offspring having blue eyes.
c. People going to a grocery store tend to look for sales and special offers.
d. Many people remember the explosion of the space shuttle Columbia in 2003.

13. What are two of the three identified components of socioeconomic status?
a. income level and education attainment
b. occupational prestige and social popularity
c. political clout and job title
d. business ownership and home value

14. What does the "W" in WEIRD stand for?
a. women
b. wisdom

c. well-being
d. Western

15. What is one of the most common problems associated with longitudinal studies?
a. ethical concerns
b. attrition of participants
c. difficulty of measuring results
d. lack of control

16. A researcher is interested in studying the recent pickleball craze, and wants to know how both newer and more seasoned players operate during the game. They go to a court and sit quietly among others watching various people playing the sport. Which research method is being used?
a. naturalistic observation
b. case study
c. survey
d. experiment

17. Researchers have a responsibility to explain the benefits and risk of research to potential participants, as well as ensure that participants know that they are free to discontinue their participation if they so choose. What is this explanation part of?
a. due diligence
b. debriefing
c. recruitment
d. informed consent

Check Your Understanding Questions

18. Give two examples of disciplines that contribute their perspective to lifespan psychology from a human development perspective.

19. What are two examples of biological growth or maturation?

20. Give an example of how a sensitive period might be related to the development of a given skill.

21. Why is it accurate to say that stage theories are associated with discontinuous development?

22. How do fraternal and identical twins differ in terms of their genetics?

23. Which theorist focused on children's incorrect answers to problem-solving, and how was this related to the theory?

24. Provide at least two examples of developmental concepts present in the lifespan.

25. What is at the center of the ecological systems model developed by Urie Bronfenbrenner?

26. A law is passed raising the minimum wage for all workers. What system does this occur within?

27. What problem does the criticism "Psychology is WEIRD' bring to our attention?

28. What two pieces of information does a correlation coefficient give us?

29. Which research method allows us to make cause-and-effect conclusions?

Personal Application Questions

30. Think about yourself at age fifteen years. In what ways are you similar to that version of yourself? In what ways are you different? How does your answer relate to the terms "maturity" and "stability" as discussed

in the text?

31. Identify an area of study within lifespan development that you find particularly intriguing (e.g., cognitive development, social development, physical development). Describe a specific example from your life that illustrates the importance of this area. How has this area of study helped you understand your own development?

32. Think about a skill or ability you have developed over time, such as playing an instrument, participating in a sport or hobby, or learning a new language. In what ways was this development continuous (gradual improvement) and discontinuous (sudden leaps)? Provide examples from your experience to illustrate this.

33. Reflect on an aspect of your personality or behavior that you believe was influenced by both your genes and your environment. How do you think nature (your genetic makeup) and nurture (your upbringing and experiences) played a role in shaping this aspect of yourself?

34. Think about a major transition or milestone in your life (e.g., starting high school, moving to a new city, beginning a new job). How do both Erikson's psychosocial theory and Piaget's cognitive development theory explain your experience during this transition? Describe how both theories apply to your experience.

35. Reflect on your own cognitive development from childhood to adolescence. How do you think your thinking abilities have changed over time? Which aspects of Piaget's stages of cognitive development do you recognize in your own growth?

36. Identify a skill you can do independently, a skill you can do with help, and a skill that is currently beyond your abilities even with the help of a more skilled person. How do these skills relate to Vygotsky's concept of the zone of proximal development (ZPD)? Reflect on how understanding your ZPD can influence your learning and development.

37. Reflect on the impact of smartphones, which were introduced in 2007 and by 2010 were owned by a vast majority of the American population. How have smartphones changed the way society interacts with one another? Consider aspects such as communication, socialization, and access to information. Provide specific examples from your own experiences and observations to illustrate these changes.

38. Consider a time when a significant change in your environment (e.g., moving to a new city, changing schools, starting a new job) affected your development. What aspects of the new environment were most influential, and how did they impact you? Provide specific examples to support your reflections.

39. Apply Bronfenbrenner’s ecological systems model to your own life. Identify and describe elements in your life that fit within each of the five ecological systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. How have these systems interacted to shape your development? Be sure to relate your examples to the relevant learning objectives in this section.

40. Think about a policy or practice that has impacted your life, such as an educational policy or a workplace rule. How do you think research in developmental psychology could inform improvements to this policy or practice? Reflect on the connection between research, application, and policy in your own experiences.

41. Reflect on your own cultural identity and how it shapes your worldview. How do you think researchers can ensure their findings are relevant and respectful to different cultural contexts? Provide examples from your life where cultural understanding has played a critical role in your interactions and development.

42. Consider a survey or questionnaire you have taken in the past (e.g., in school, at work, for medical purposes, or an attempt to assess your feelings regarding a purchase). Reflect on your experience as a participant. How do you think the design of the survey influenced your responses? Relate your reflections to concepts of survey design and validity discussed in the text.

43. Imagine you are participating in a longitudinal study that tracks your development over several years. What aspects of your life would you find most interesting to document, and why? Discuss how longitudinal research methods can provide insights into developmental changes over time.

44. Reflect on the importance of ethics in research. Have you ever been in a situation where you had to consider ethical principles (e.g., confidentiality, informed consent, avoiding harm)? How do you think these principles apply to research in developmental psychology? Provide examples to illustrate the importance of ethical guidelines.

Essay Questions

45. Identify and discuss three major questions of interest within the field of lifespan development—stages of development, impact of early childhood experiences, and role of genetic and environmental factors. How do these questions guide research and practice in the field? Provide examples from the text that demonstrate how researchers address these questions.

46. Describe the concept of sensitive periods in development. Why are these periods important for certain skills and abilities? Provide examples from the text and discuss how this understanding can inform parenting practices and early childhood education.

47. Compare and contrast Piaget's theory of cognitive development with Vygotsky's sociocultural theory. How do these theories explain the process of learning and development in children? Use specific examples from the text to support your analysis. In your essay, focus on the following three areas: the role of the learner, the role of culture, and the importance of stages. Finally, explain the practical implications for a schoolteacher or any educator considering both theories of cognitive development.

48. Explain the meanings of key variables in lifespan development research, such as gender, socioeconomic status, and ethnoracial identity. How do these variables influence research findings? Provide examples from the text to illustrate how each variable is defined and its impact on research outcomes.

49. Discuss the challenges to the generalizability of research findings in developmental psychology. What does the term "WEIRD" refer to, and how does it highlight issues in research applicability? Use examples from the text to explain the significance of these challenges and potential solutions.

50. Discuss the different research methods used in developmental psychology, including longitudinal, cross-sectional, cross-sequential, naturalistic observation, case study, correlational, experimental, and quasi-experimental designs. Describe the strengths and weaknesses of each method and provide examples from the text to illustrate how each method is used in developmental research. In the second part of your essay, describe the importance of validity and reliability in developmental psychology research. How do researchers ensure that their studies are both valid and reliable? Provide examples from the text to illustrate the concepts of validity and reliability in research.

Genetic, Prenatal, and Perinatal Health

2

FIGURE 2.1 Pregnancy is a time of immense change for the growing offspring and all those involved in the pregnancy, birth, and caregiving of the newborn. (credit: modification of work "Pregnancy" by freestocks.org/Flickr, CC0 1.0)

CHAPTER OUTLINE

2.1 Genetics and Environment
2.2 Reproductive Systems and Conception
2.3 Pregnancy and Prenatal Development
2.4 Childbirth and Perinatal Health
2.5 The Newborn in Context

WHAT DOES PSYCHOLOGY SAY? Luisa is ten weeks pregnant with her first child and has been struggling with morning sickness. Nothing tastes right except for her favorite avocado roll from the sushi place nearby. Luisa knows she isn't supposed to have raw fish but is unsure whether that means all sushi is risky. She's already concerned about the half glass of wine she had at Thanksgiving before she knew she was expecting, and she just heard that the cup of coffee she enjoys every morning might be dangerous to the developing baby. She has started wondering whether her child will inherit her curly hair and height. On top of that, Luisa is interested in learning about home birth. When she suggested this, her mother insisted that she should give birth only in a hospital. At least she and her partner agree that they want only one biological child, and he will get a vasectomy after the baby's birth. Lately, he has been hesitant and nervous about the procedure and has questions about recovery. Like many expecting and new parents, she wonders:

- Will the child look or behave more like her or her partner?
- What physical traits or health conditions that run in her family is her child likely to inherit?

- How dangerous is consumption of substances like alcohol, caffeine, or uncooked fish to a birthing parent and a developing fetus?
- Should birth take place in a hospital, at home, or somewhere else?
- How effective is a vasectomy as a method of family planning?

In this chapter, you'll find out what current research says about questions like these and more.

2.1 Genetics and Environment

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe chromosomes, genes, and DNA
- Discuss the connection between genetic inheritance and genotype
- Identify common inherited and genetic disorders
- Describe the ways genes and environments interact

To say that Arjun is outgoing or extraverted would be an understatement. He thrives on time spent with others—loud parties, packed professional conferences, and crowded sports bars. His brother Ajay is more introverted and prefers quiet meals with his partner or a close friend, reading, and solo hikes. Despite their differences in personality, Arjun and Ajay have a strong physical resemblance. Their parents often wonder how their children can look so similar but have such distinct personalities when they have the same biological parents and grew up in the same home.

To understand how human development occurs, and how similarities and differences like those observed by Arjun and Ajay's parents arise, we need to examine the role of genetic inheritance (nature), environment and experiences (nurture), and the interplay between genetic and environmental effects (nurture and nature). Connections between chromosomes, DNA, genes, genetic inheritance, inherited and genetic disorders, and the way our genetics and environments interact contribute to the similarities and individual differences observed across human development.

Chromosomes, DNA, and Genes

The first step in grasping the way genetics influence development is to understand chromosomes, DNA, and genes, and the way each functions within a cell–the focus of the field of molecular genetics. Cells duplicate themselves through a process of cell division called **mitosis**, which allows organisms to grow and replace old or damaged cells. Mitosis accounts for the replication of most types of cells in the body and ensures that each new cell includes all forty-six chromosomes, organized in twenty-three pairs located in the cell nucleus. A **chromosome** is a rodlike structure in the cell nucleus, composed of long molecules of DNA. **DNA (deoxyribonucleic acid)** molecules contain an individual's genetic information; they coil around each other to form a double helix, a twisted ladderlike structure (Figure 2.2).

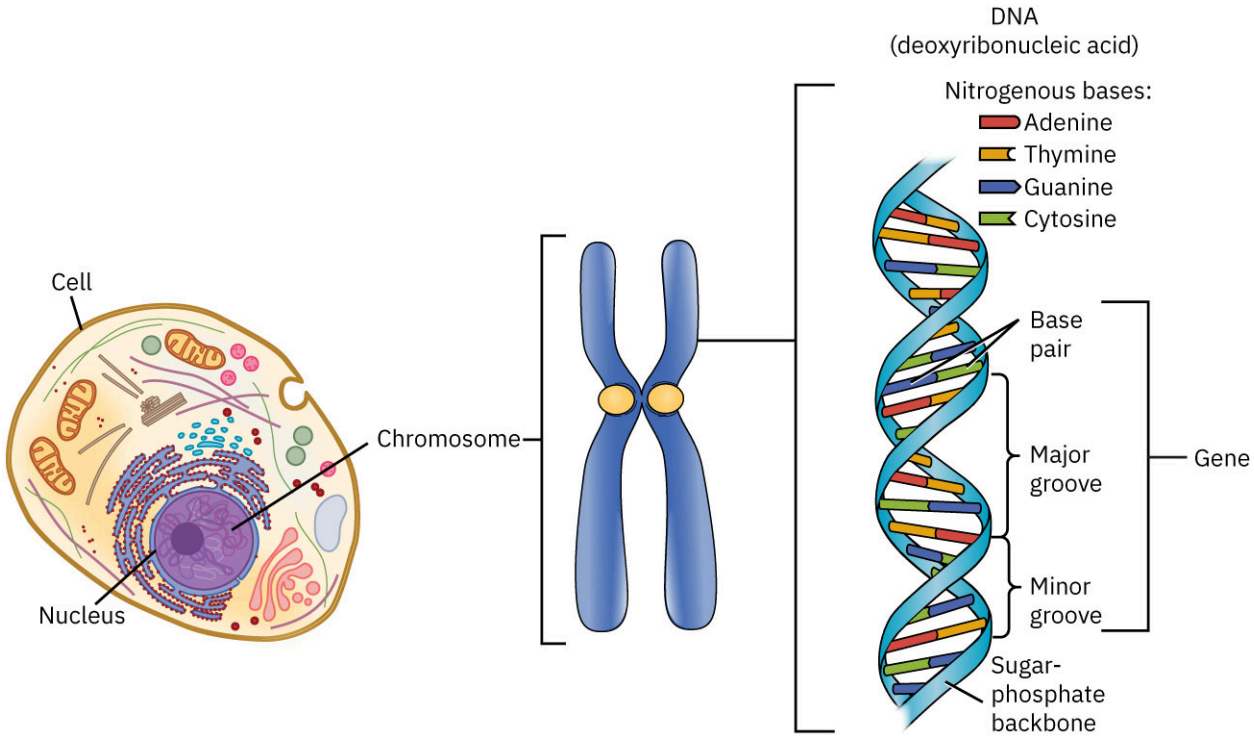


FIGURE 2.2 Chromosomes are located in the nucleus of the cell and are made up of the double-helix molecule of DNA. Genes are segments of the DNA sequence, made up of nucleic acid bases that provide the instructions for all the cells in the body. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

A human sex cell—the reproductive cell called a **gamete**—holds only twenty-three chromosomes, one from each pair of parental chromosomes. These cells replicate through a different type of cell division called meiosis. During **meiosis**, a sex cell, whether an ovum in a female or a sperm cell in a male, splits into two new cells that each also contain only twenty-three chromosomes. Thus, gametes contain only half the genetic information of each parent, ensuring that after fertilization of the ovum, the resulting offspring will have a total of forty-six chromosomes, twenty-three from the biological mother and twenty-three from the biological father. Which particular chromosomes these are is largely random: eight million different combinations are possible, contributing to the wide genetic variation seen among humans.

A human nonsex cell, called an **autosome**, is what is present in chromosome pairs one through twenty-two. The twenty-third pair—the sex chromosomes—may look the same or different (Figure 2.3). The sex chromosomes are called the X and Y chromosomes, based on their shapes. The combination of these chromosomes determines the child's sex at conception: XX for a biological female and XY for a biological male.

Females have two X chromosomes, so each of their ova contains an X chromosome in the twenty-third position; males have both X and Y chromosomes, so each of their sperm cells contains one or the other, and thereby determines the baby's sex.

Intersex is an umbrella term for people who have one or more of a range of variations in sex characteristics or chromosomal patterns that do not fit the typical conceptions of male or female; the prefix *inter-* means "between" and refers here to an apparent biological state "between" male and female. There are many causal factors that can make a person intersex; these are often referred to as differences in sex development (DSD), though there is debate over which DSDs make a person intersex. Genetically, the baby may have a different number of sex chromosomes. Rather than two X chromosomes (associated with females) or one X and one Y chromosome (associated with males), babies are sometimes born with an alternative number of sex chromosomes, such as XO (only one chromosome) or XXY (three chromosomes). In other cases, hormonal activity or even chance occurrences in the womb can affect the baby's anatomy. The number of people born

intersex has been expressed to be as high as 1.7 percent of births; however, based on different interpretations of what makes someone intersex, you may see other statistics or ranges quoted (Fausto-Sterling, 2000; Becker, Chin & Bates, 2022).

While some conditions or disorders associated with being intersex may require treatment or intervention, being intersex is not a disorder. The intersex community and many medical groups view surgery to support the assignment of an infant to a specific sex to be unethical and even abusive. For example, Medical ethicist Kevin Behrens (2020) argues that surgical interventions for intersex children should only be carried out when surgery serves the best medical interests of the child.

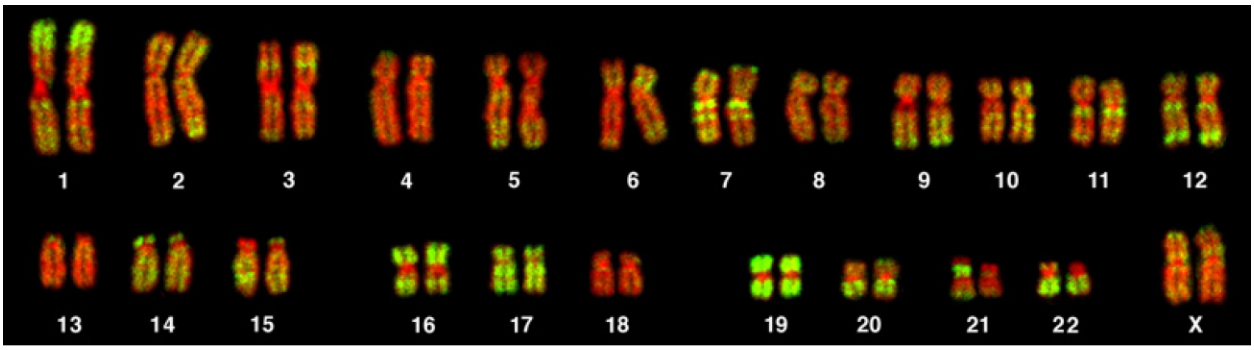


FIGURE 2.3 This image shows a full set of twenty-three pairs of chromosomes. Chromosomes one through twenty-two are the autosomes, and the chromosomes at the bottom right show the pairing for a biological female (XX) at conception. (credit: modification of work "Figure 7. Localization of Alu Sequences in Nuclei of Fibroblasts and Lymphocytes" by Andreas Blozer et al/PLOS Biology, CC BY 2.0)

The most commonly occurring twenty-third chromosome pairings are XX and XY (National Organization for Rare Disorders, n.d.; Genetic and Rare Diseases Information Center, n.d.). However, differences may occur during cell division that result in aneuploidy, an atypical number of autosomal or sex chromosomes that may result in various syndromes (Gottlieb et al., 2023; Skuse et al., 2018) (Table 2.1).

Sex Chromosome Combinations	Medical Terminology	Prevalence
XX	Biological female	Majority
XY	Biological male	Majority
XO	Turner syndrome	1 in 2,500 females
XXY	Klinefelter syndrome	1 in 500 to 1,000 males
XXX	Trisomy X	1 in 1,000 females
XYY	XYY syndrome	1 in 1,000 males
XXYY	XXYY syndrome	1 in 18,000 to 50,000 male births

TABLE 2.1 Types of Sex Chromosomes Combinations

Our genetic inheritance is carried in the genes that make up our chromosomes. A **gene** is a segment of DNA that contains the instructions for making proteins that regulate the structure and functioning of the body. It's estimated that humans have between 20,000 and 25,000 genes (National Human Genome Research Institute, 2022). The rungs of the chromosome's ladderlike structure, which house the DNA sequence, consist of four nucleic acid bases: guanine (G), adenine (A), thymine (T), and cytosine (C). These nucleic acids pair up in

specific ways (Klug et al., 2016). However, not all of our genes code for proteins; some regulate gene expression, or how genes work and interact with each other.

The complete sequence of an organism's DNA is called its **genome**. Each human being shares about 99.9 percent of their genome with all other humans on the planet; the remaining 0.1 percent contributes to the differences we observe in physical and behavioral differences, as well as the variations in our risk of developing certain types of diseases (Duello et al., 2021; National Human Genome Research Institute, 2022).

Genetic Inheritance

Have you ever wondered why you share some physical characteristics with your biological parents but not others? Maybe you have your mother's freckles, or perhaps a different eye color than either of your parents. How do these similarities and differences occur?

Recall that humans receive twenty-three chromosomes each from their biological parents' sperm and ovum. During fertilization, these chromosomes fuse to create one cell with twenty-three pairs of chromosomes, each carrying two copies of each gene. The particular composition of the genes we inherit makes up our unique **genotype**, which cannot be directly observed. Some genes have a slightly different alternate forms, called an **allele**, and the specific alleles in our genotype can lead to differences in gene expression (National Human Genome Research Institute, 2022). These differences, in turn, result in a different **phenotype**, or set of characteristics that can be observed, such as hair or eye color. Biological parents may both give their child the same allele, or each parent may contribute a different allele.

The genes for certain traits, such as eye color, have both dominant and recessive alleles. If an allele is dominant, we need to inherit only one copy of it for the **dominant trait**, such as brown eyes, to be observed. However, we need two copies of a recessive allele, such as that for blue eyes, for the **recessive trait** to be observed. This pattern of inheritance is called the recessive/dominant pattern. If a child inherits the same eye color allele from both parents, the child is considered **homozygous** for this trait. The child who inherits different eye color alleles from both parents is **heterozygous** for this trait (Figure 2.4).

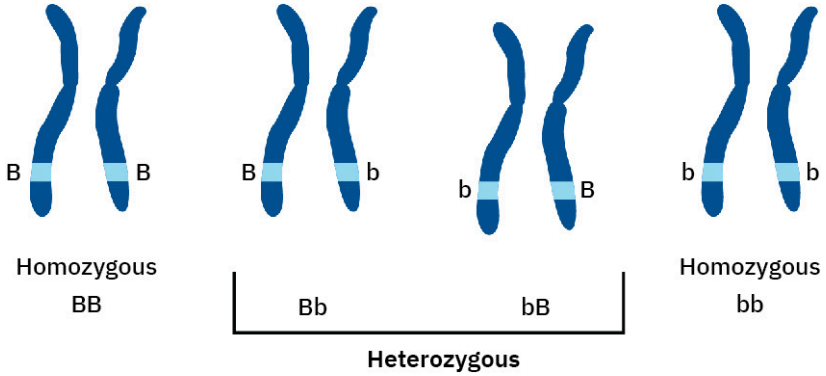


FIGURE 2.4 B denotes the dominant allele for brown eyes, and b denotes the recessive allele for blue eyes. Each pairing represents a different probability of inheriting eye color. There is a 25 percent chance of inheriting homozygous alleles resulting in brown eyes (BB), a 50 percent chance of inheriting heterozygous alleles (Bb or bB) resulting in brown eyes, and a 25 percent chance of inheriting homozygous alleles resulting in blue eyes (bb). (credit: modification of work "Heterozygous" by Darryl Leja, National Human Genome Research Institute/Wikimedia Commons, Public Domain)

Another inheritance pattern for traits such as hair texture, skin color, and height demonstrates incomplete or partial dominance, which occurs when an individual is heterozygous for a particular trait and neither allele is completely dominant or recessive. The result is **incomplete dominance**, an intermediate phenotype in which both alleles are expressed (Figure 2.5). For instance, if one parent is homozygous for curly hair and the other is homozygous for straight hair, incomplete dominance will result in the child's having wavy hair, because alleles for both straight and curly hair are simultaneously expressed (Omoto & Lurquin, 2004).

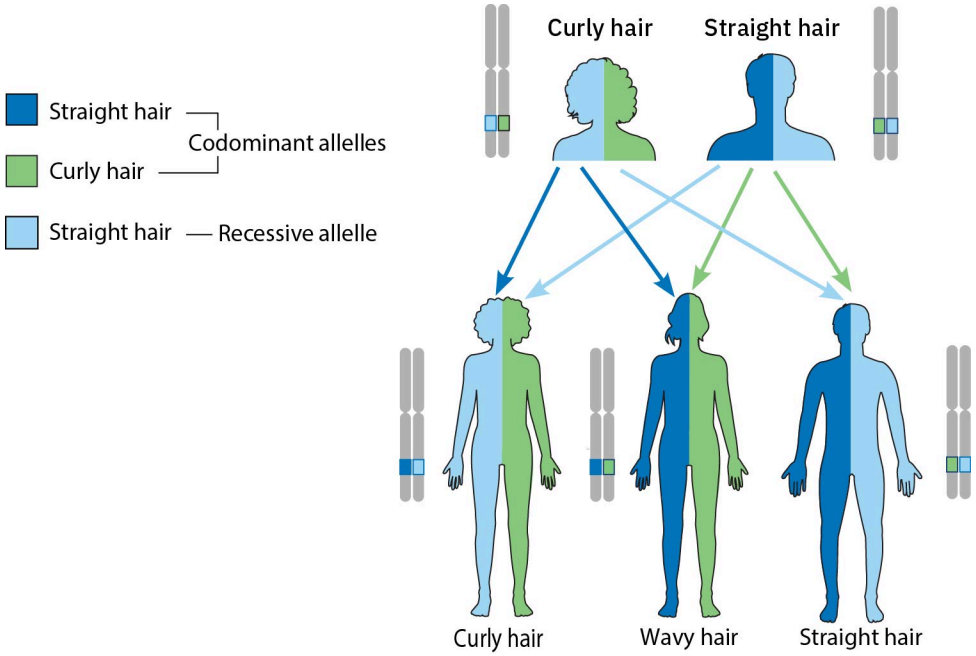


FIGURE 2.5 If one parent is homozygous for curly hair and the other is homozygous for straight hair, their child will have wavy hair; this is a case of incomplete dominance. (credit: modification of work "ABO system codominance" by National Institutes of Health/Wikimedia Commons, Public Domain)

For other traits, a codominant inheritance pattern holds. With a **codominant trait**, an individual inherits both alleles of a gene, and each is fully expressed (National Human Genome Research Institute, 2024). For example, the ABO blood group has three alleles, A, B, and O, all encoded by the same gene. A child will inherit one of these alleles from each parent, which results in one of four possible phenotypes (A, B, AB, or O), commonly known as your blood type (Dean, 2005) (Figure 2.6).

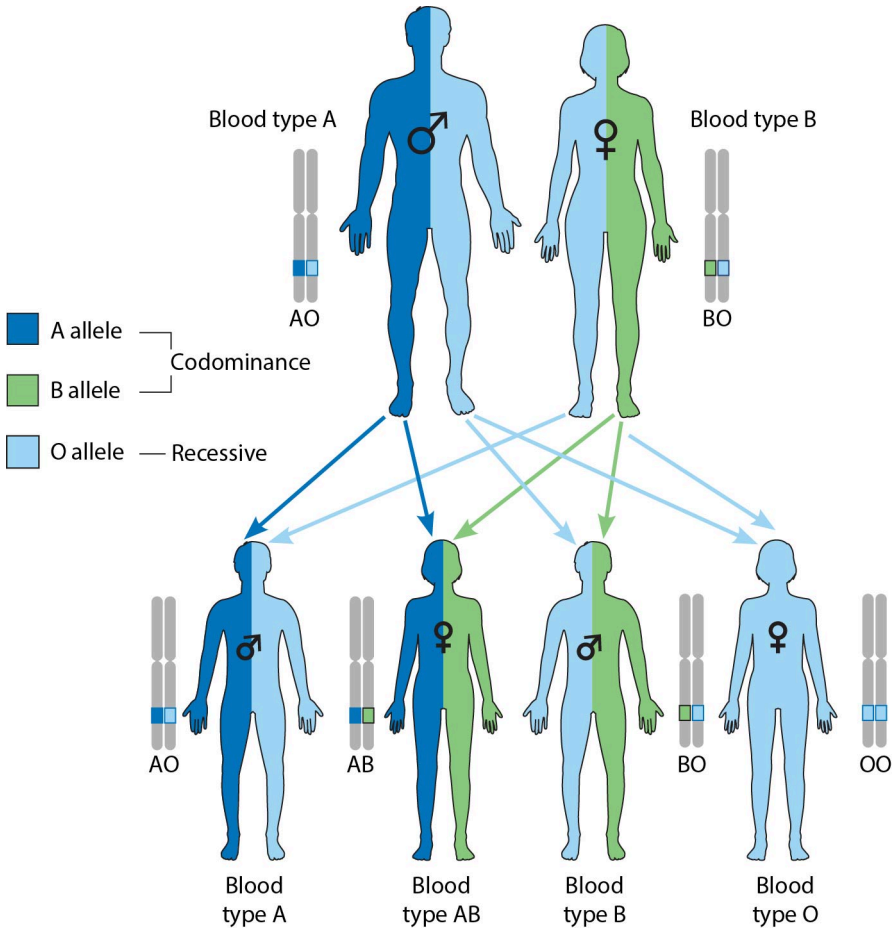


FIGURE 2.6 A child whose biological parents are heterozygous for the A, B, O blood type alleles (AO and BO in this example) will have equal probabilities of expressing any of the four blood type phenotypes (A, AB, B, or O). (credit: modification of work "ABO system codominance" by National Institutes of Health/Wikimedia Commons, Public Domain)

Another factor that can influence the way genes are expressed is whether they are located on the X chromosome, meaning they are X-linked (Figure 2.7). For example, the genes identified for red-green colorblindness, a recessive trait, are located on the X chromosome. Biological males are more frequently affected than biological females by recessive X-linked traits such as red-green colorblindness. Females need to receive the recessive allele for this trait from both biological parents, whereas males need to receive it only from their biological mother.

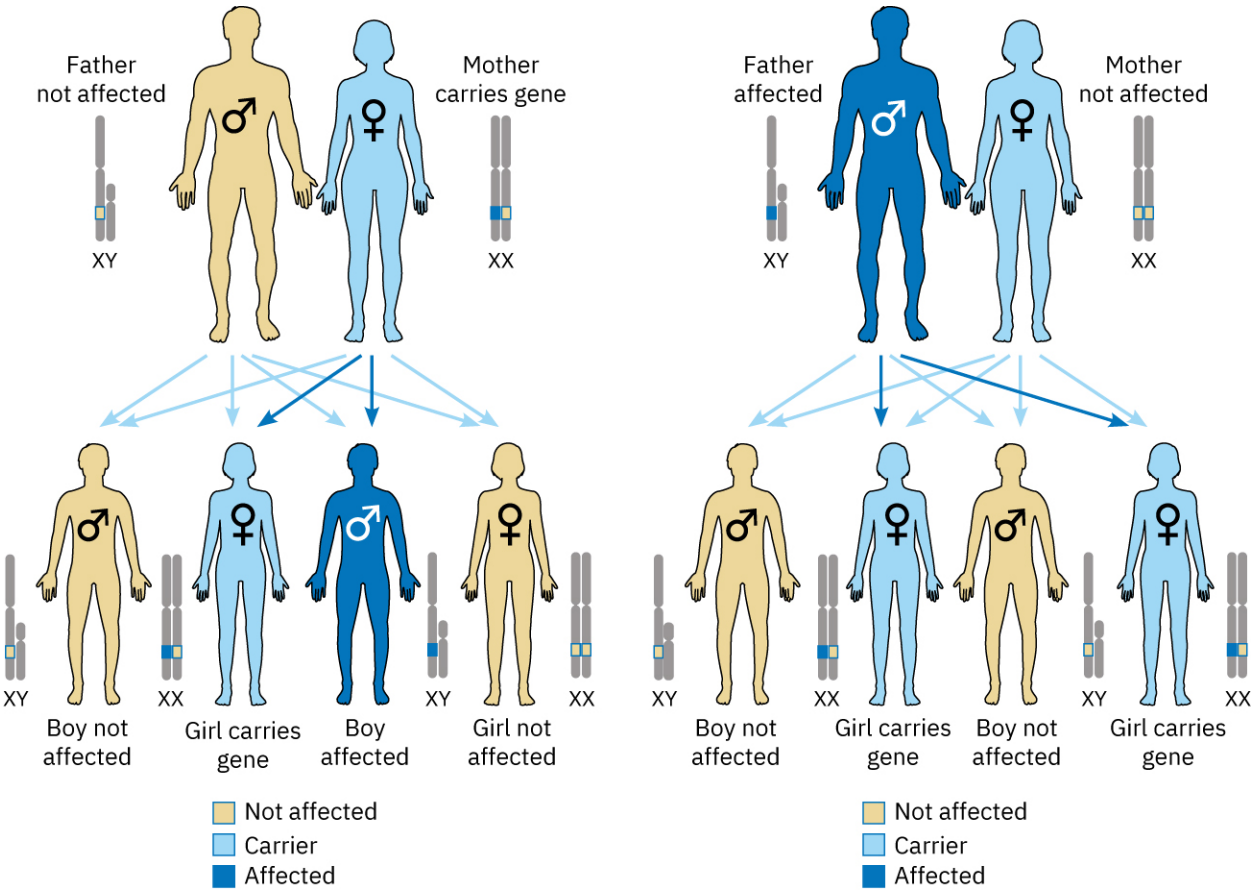


FIGURE 2.7 Females who carry or inherit one X-linked red-green colorblind allele will not express the trait and are referred to as carriers. Males who carry or inherit the X-linked red-green colorblind allele and females who carry or inherit two copies will express the trait. (credit: modification of work "ABO system codominance" by National Institutes of Health/Wikimedia Commons, Public Domain)

The traits described rely on one or a few genes, but the vast majority of physical, behavioral, and health traits are a type of **polygenic trait**, meaning they are governed by multiple genes. Together, the effects of all the individual genes add up to create the observed phenotype. Scientists are beginning to identify which combinations of genes are associated with a range of complex traits and diseases such as cognitive ability, major depressive disorder, type 2 diabetes, and coronary heart disease (Tam et al., 2019). Not all the phenotypic variation observed is accounted for by genes, however, environmental factors also contribute to the expression of a trait. Complex traits and diseases are likely a result of **multifactorial inheritance**; that is, their occurrence depends on both genetic and environmental factors.

In addition, a single gene can influence multiple traits and produce a variety of phenotypic outcomes, a characteristic referred to as **pleiotropy** (Figure 2.8). For example, PKU (phenylketonuria) is a single-gene recessive disorder. This mutation results in the ineffective metabolism of phenylalanine (found in milk and other foods), bringing about a variety of issues if untreated, such as cognitive disability, eczema, and delayed growth (Elhawary et al., 2022; Targum & Lang, 2010). Another type of pleiotropic effect occurs when genes referred to as generalist genes affect different but related phenotypes. For example, the same genetic variants are shared across verbal and nonverbal cognitive abilities (Bearden & Glahn, 2017), and shared genetic variants are indicated across several psychiatric disorders (Cross-Disorder Group of the Psychiatric Genomics Consortium, 2019).

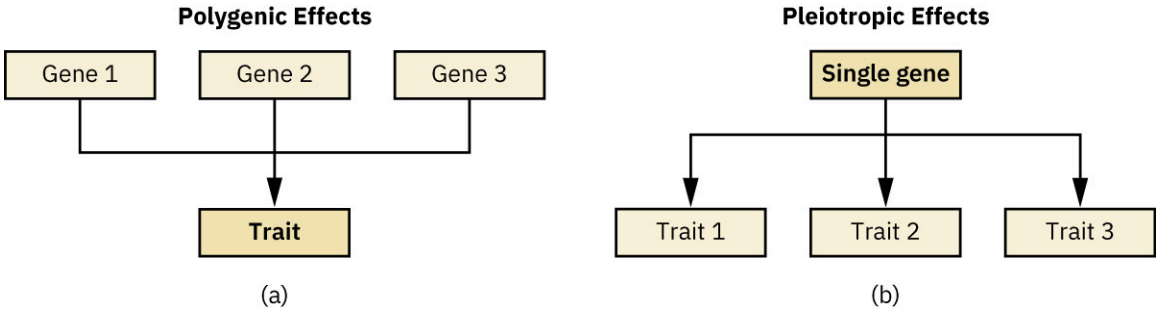


FIGURE 2.8 (a) Polygenic effects are observed when the products of several genes are combined to create a particular phenotype. Conversely, (b) pleiotropy effects occur when the products of a particular gene affect multiple phenotypes. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Inherited and Genetic Disorders

Genes contribute to all aspects of human development, functioning, and trait expression, including inherited and genetic disorders. There are three main types of genetic disorders: single-gene disorders, chromosomal disorders, and multifactorial inherited disorders.

A **single-gene disorder** occurs in a single gene and can happen in two ways: (1) Individuals may inherit a pair of recessive alleles responsible for a disorder, or (2) mutations to the DNA sequence can result spontaneously, from errors during cell division or from exposure to environmental toxins or other hazards such as x-rays or pollution. Mutations occur when the DNA sequence of a gene is altered; this can occur in a variety of ways but most commonly through a change in a single nucleic acid base pairing substitution. Examples of single-gene disorders include PKU, Tay-Sachs disease, cystic fibrosis, and sickle cell anemia (Table 2.2).

A **chromosomal disorder** is due to errors during cell division and result in structural or numerical abnormalities. Structural abnormalities occur when sections within a chromosome are deleted, duplicated, or inverted (a section of the chromosome flips its orientation), or when sections are rearranged within or across the chromosome pairs. Numerical abnormalities happen during cell division and result in one of the twenty-three chromosome pairs containing only one chromosome (monosomy) or having an extra chromosome (trisomy). For example, individuals with Down syndrome will have three twenty-first chromosomes rather than two (Figure 2.9). Because each chromosome contains a large number of genes, deviation in chromosome number (more or less than two) will affect a range of characteristics.

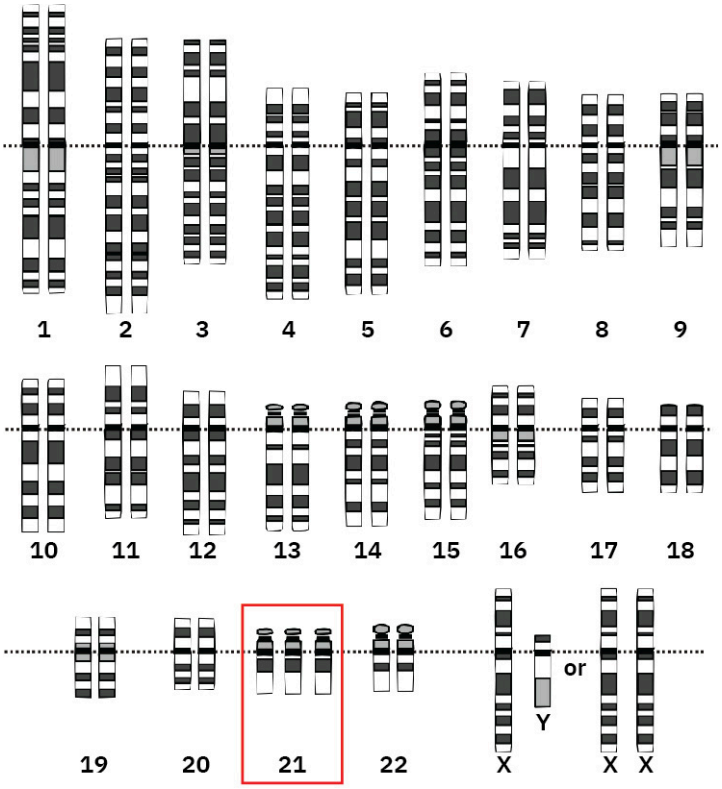


FIGURE 2.9 Down syndrome is characterized by trisomy, the presence of an extra chromosome, on the twenty-first chromosome. The additional genetic material can affect physical and cognitive development and bring a higher risk of thyroid and heart disease. (credit: modification of work "Down Syndrome Karyotype" by National Human Genome Research Institute/Wikimedia Commons, Public Domain)

A disorder resulting from **multifactorial inheritance** occurs when both polygenic effects (controlled by many genes) and environmental effects contribute to a phenotype. Studies have identified several genes that contribute to the risk of developing type 2 diabetes, heart disease, obesity, autism spectrum disorder, and anxiety disorders (Dickerson & Dickerson, 2023; Genovese, & Butler, 2023; Li et al., 2024; National Human Genome Research Institute, 2020b). Many of these disorders are also influenced by multiple genes and a range of environmental influences, such as the prenatal environment, nutrition, socioenvironmental experiences, and environmental conditions.

Known inherited and genetic disorders can be screened for before pregnancy, prenatally, and shortly after birth. Table 2.2 offers an overview of some of these disorders.

Disorder	Prevalence	Symptom Description	Treatments
Phenylketonuria (PKU)	1 in 10,000 to 15,000 live births	Range of intellectual disability, eczema, lighter skin due to pigment defects	Limit on foods containing phenylalanine; nutritional supplements
Tay-Sachs disease	1 in 320,000 live births; more frequent in people of central or eastern European Jewish descent	Fatal progressive neurological disorder, muscle degeneration, blindness	No current treatments
Cystic fibrosis	1 in 3,200 live births; people of European ancestry at highest risk	Thick, sticky mucus that clogs the lungs; vulnerability to pulmonary infections	Treatments to manage symptoms, prevent complications
Sickle cell anemia	1 in 365 live births; Black and African American individuals at greatest risk	Sickle-shaped red blood cells; anemia; acute chest pain; pain episodes; organ damage	Treatments to manage symptoms, recently approved cell-based gene therapy
Fragile X syndrome	1 in 7,000 male and 1 in 11,000 female live births	Mild to moderate learning disabilities; distractibility and impulsivity	Early intervention, special education, treatment for attention-deficit/ hyperactivity disorder (ADHD)
Down syndrome	1 in 1,000 live births	Range of intellectual disabilities; unique facial features; poor muscle tone; possible heart, digestion, or hearing problems	Physical, occupational, speech, and educational therapy; medical intervention as needed

TABLE 2.2 Examples of Inherited and Genetic Disorders (sources: Centers for Disease Control and Prevention, 2024a, 2024b; Elhawary et al., 2022; National Human Genome Research Institute, 2013, 2014, 2020a; Ramani & Sankaran, 2023; U.S. Food and Drug Administration, 2023)

Gene Environment Intersections

Genetic research has helped us understand human traits that rely on one or two genes. However, most human traits, such as personality traits, are more complex and result from a combination of genetic (nature) and environmental (nurture) influences. Understanding how, and how much, genes and environments influence gene expression together is the focus of the field of **behavioral genetics**. As described in 1.2 Themes of Development, heritability estimates indicate the degree to which genetics contribute to individual differences for a trait within a population. A high heritability estimate, near 100 percent, indicates that genetic effects explain a lot of variability within a population; a low heritability, closer to 0 percent, indicates that most of the variability is environmental (Mayhew & Meyre, 2017) (Table 2.3).

The goal of behavioral genetics is to explain 100 percent of the observed variance for a trait. Interpreting a heritability estimate also reveals to what degree environmental influences account for differences in a trait. For example, the heritability of intelligence is 50 percent, which means that genetics explains half the observed differences in this complex trait, and the remaining 50 percent is due to environmental effects. Note that heritability is a population statistic and cannot be applied to a specific individual. In other words, heritability can't tell you how much your intelligence is due to the specific genes you inherited. Consider the

examples in Table 2.3.

Trait	Heritability
Height	80–90%
Blood pressure	30–70%
Intelligence	50%
Big Five personality traits	40–60%
Autism spectrum disorder	64–91%
Depression	37%
Alcohol dependence	50%

TABLE 2.3 Heritability Estimates for Common Human Traits (sources: Doris, 2010; Plomin & von Stumm, 2018; Power & Pluess, 2015; Schrempft et al., 2018; Sullivan et al., 2000; Tick et al., 2015; Verhulst et al., 2014)

Heritability helps us understand understand the magnitude of individual genetic and environmental effects on a complex trait. But how do genes and environments work together to create the range of phenotypes observed for traits like personality or depression? The answer involves exploring the way genetic and environmental effects are intertwined via epigenetic effects, gene and environment interactions (G × E), and gene and environment correlations (rGE), and epigenetic effects.

Epigenetics

As you learned in 1.2 Themes of Development, epigenetics investigates the way environments, experiences, and behaviors influence the expression of inherited genes without altering the DNA sequence of those genes (National Human Genome Research Institute, 2022). How do epigenetic effects influence gene expression? One common way gene expression is regulated is by the addition and removal of chemical tags through the process of **DNA methylation** (Figure 2.10). The addition of methyl groups to the nucleotide base(s) of the gene, prevents expression of or silences the gene. Conversely, when a methyl group is removed from the nucleotide base(s) of the gene, it increases gene expression (Moore et al., 2012; Villicaña & Bell, 2021).

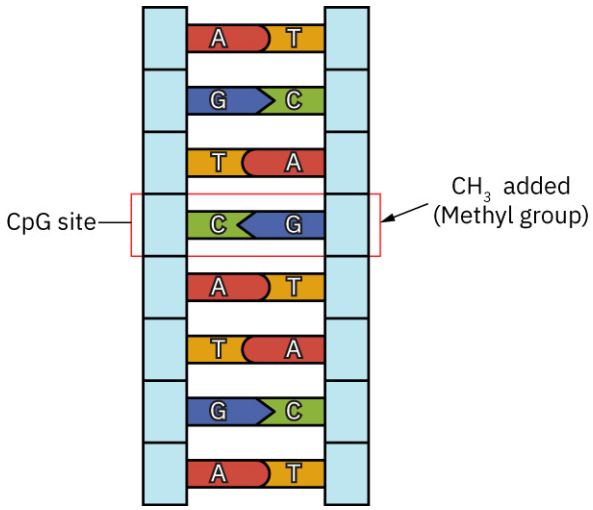


FIGURE 2.10 During DNA methylation, methyl groups are added to or removed from the nucleotide bases, influencing gene expression. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

LINK TO LEARNING

Watch this TED-Ed brief overview of epigenetics (https://openstax.org/r/104Epigentics) to learn more.

Epigenetic effects can be activated by chemical and environmental exposures such as (lead, air and water pollutants, PCBs, and BPA), diet and food availability (such as lack of folate, or prenatal malnutrition), lifestyle habits (such as smoking, high alcohol consumption, stress, and exercise), and a range of drug treatments (Toraño et al., 2016). These can occur throughout the lifespan and are linked to increased risks for chronic illness and disease and development of mental and physical health issues. Early studies of epigenetic effects examined the records of children whose mothers were pregnant during the Dutch famine of 1944–1945 during World War II (Heijmans et al., 2008). Prenatal exposure to the famine was linked to a greater risk for the development of type 2 diabetes and heart disease later in life (De Rooij et al., 2021). The children of mothers exposed to prenatal famine were larger at birth, while the children of fathers exposed to prenatal famine were heavier in adulthood (De Rooij et al., 2021). These studies indicate that epigenetic effects may be transmitted to future generations.

More recent investigations have focused on the effects of early childhood stress exposure. In children who had experienced earlier traumatic events, often called adverse childhood experiences, epigenetic effects were observed in areas of the brain that control the stress response. These children were more reactive to stress, even low levels, and more prone to depression and anxiety due to the epigenetic changes identified (Turecki & Meaney, 2016). Whether epigenetic effects are passed to the next generation in humans is just beginning to be examined. Although the chemical tags connected to epigenetic effects are usually removed during gamete production, research suggests some can be passed to future generations in animals (Gillette et al., 2018).

Regardless of whether epigenetic effects are passed to the next generation, providing health services and nutritional support to pregnant individuals, infants, and toddlers can reduce preventable illnesses with long-lasting implications that occur through epigenetic mechanisms (National Scientific Council on the Developing Child, 2010). For example, improved health care, exercise, and nutritional resources may serve as important environmental epigenetic factors that can improve mental and physical health. Nutrition and exercise show promise as protective factors in reducing risks of metabolic disease and other health risks (Abraham et al., 2023; Bekdash, 2024).

Genotype × Environment Interactions

Another way genes and environments work together to create a phenotype is through a **genotype ×**

environment interaction. In these events, the effect of the genotype (nature) on a phenotype (observed trait) depends on our environment (nurture). In other words, some genes will have an effect only under certain environmental conditions.

A classic example of a genotype × environment interaction is PKU (Widaman, 2009). Recall that PKU is a recessive disorder but will negatively affect development only if a low-phenylalanine diet isn't followed. A genetic risk (two affected alleles) must interact with a high-risk environment (a high-phenylalanine diet) for the PKU phenotype to occur. Other gene × environment interaction models indicate that some genotypes may show differential susceptibility, which means they are sensitive to both protective and risk environments. A group of adolescent males with the short allele of a certain gene associated with serotonin reported more depressive episodes when experiencing lower family support, and fewer episodes with more family support. However, this interaction was not found for the long allele of this gene (Li et al., 2013).

As mentioned in Chapter 1 Lifespan Psychology and Developmental Theories, there are several types of genotype-environment correlations, which indicates that our genes and environments are not randomly distributed but are instead connected.

Gene and Environment Correlations

The understanding of how gene and environment interact suggests that our genes play a role in shaping our environments and experiences. Three types of genotype-environment correlations (rGEs) are evident across the lifespan: passive, evocative, and active (Plomin et al., 1977; Scarr & McCartney, 1983).

A **passive genotype-environment correlation** occurs when biological parents provide both the genes and environment for children. Therefore, children inherit a genotype that covaries, or varies in correlation with, their family's environment. For example, if your inherited genes predispose you for musical ability, and you are raised by biologically related caregivers, you are also likely to be provided a family environment that supports musicality. For example, the father already had a drum set and the mother regularly plays ukulele. This type of genotype-environment correlation is observed during infancy and early childhood when children have little control over their environment.

An **evocative (or reactive) genotype-environment correlation** is evident when an individual's genetically influenced traits or behaviors evoke a response from those around them. In other words, people evoke environmental effects that covary with their genetic predispositions. For example, an inclination for musical ability will likely be noticed by a music teacher, who works with the individual challenging music pieces and encourages trying out for the school orchestra. Evocative genotype-environment correlations steadily occur across the lifespan, from infancy through late adulthood.

An **active genotype-environment correlation** is present when our genes influence the experiences and environments an individual seeks out or selects to match their genetic predispositions. In other words, people construct environments that covary with their genotypes. This effect is also referred to as niche-picking, which means we actively choose the environment (niche) where we feel most comfortable. In this example, you recognize your musical ability and select environments and experiences that allow you to pursue personal and professional opportunities connected to music. Active genotype-environments increase over the lifespan as individuals gain more control over their environment.

The interplay between genes and environment is challenging to untangle. For any given human behavior, multiple connections and mutual influences between genotypes and environments work together to create the similarities and differences observed across human behavior (Figure 2.11).

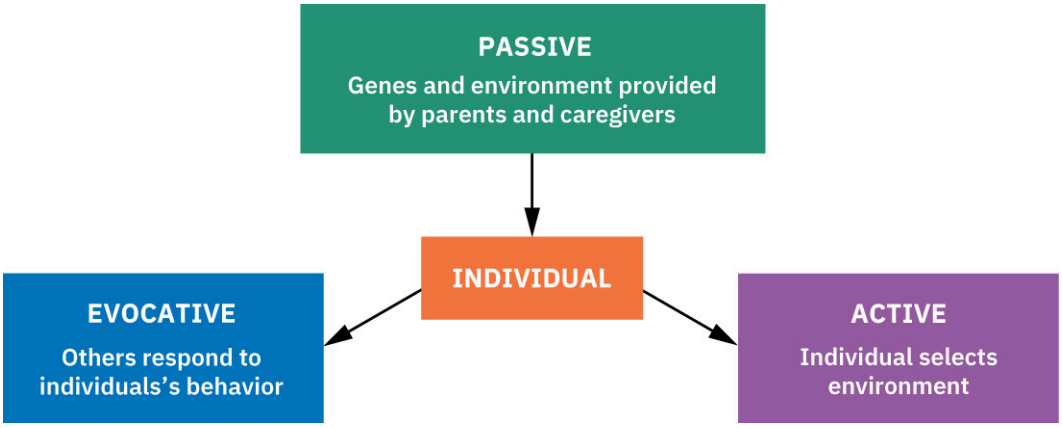


FIGURE 2.11 Three types of genotype-environments are evident across the lifespan: passive, evocative, and active. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

References

Abraham, M. J., El Sherbini, A., El-Diasty, M., Askari, S., & Szewczuk, M. R. (2023). Restoring epigenetic reprogramming with diet and exercise to improve health-related metabolic diseases. *Biomolecules*, *13*(2), Article 318. https://doi.org/10.3390/biom13020318

Bearden, C. E., & Glahn, D. C. (2017). Cognitive genomics: Searching for the genetic roots of neuropsychological functioning. *Neuropsychology, 31*(8), 1003–1019. https://doi.org/10.1037/neu0000412

Becker T., Chin M., & Bates N. (ed). (2022). Measuring Intersex/DSD Populations. Gender Identity, and Sexual Orientation. National Academies of Sciences, Engineering, and Medicine; Division of Behavioral and Social Sciences and Education; Committee on National Statistics; Committee on Measuring Sex, Gender Identity, and Sexual Orientation. Gender Identity, and Sexual Orientation. Washington (DC): National Academies Press (US); 2022 Mar 9. https://www.ncbi.nlm.nih.gov/books/NBK581039/

Behrens, K. G. (2020). A Principled Ethical Approach to Intersex Pediatric Surgeries. BMC Medical Ethics 21:108. https://doi.org/10.1186/s12910-020-00550-x.

Bekdash R. A. (2024). Epigenetics, nutrition, and the brain: Improving mental health through diet. *International Journal of Molecular Sciences*, *25*(7), Article 4036. https://doi.org/10.3390/ijms25074036

Cross-Disorder Group of the Psychiatric Genomics Consortium (2019, December 12). Genomic relationships, novel loci, and pleiotropic mechanisms across eight psychiatric disorders. *Cell, 179*(7), 1469–1482. https://doi.org/10.1016/j.cell.2019.11.020

De Rooij, S. R., Bleker, L. S., Painter, R. C., Ravelli, A. C., & Roseboom, T. J. (2021). Lessons learned from 25 years of research into long term consequences of prenatal exposure to the Dutch famine 1944–45: The Dutch famine birth cohort. *International Journal of Environmental Health Research*, *32*(7), 1–15. https://doi.org/10.1080/09603123.2021.1888894

Dean L. (2005). Blood Groups and Red Cell Antigens. *The ABO blood group*. National Center for Biotechnology Information (US). https://www.ncbi.nlm.nih.gov/books/NBK2267/

Dickerson, A. S., & Dickerson, A. S. (2023). Prenatal socioenvironmental exposures and autism spectrum disorder: A web of confusion. *Child Development Perspectives*, *17*(1), 32–38. https://doi.org/10.1111/cdep.12472

Doris P. A. (2010). The genetics of blood pressure and hypertension: the role of rare variation. *Cardiovascular Therapeutics*, *29*(1), 37–45. https://doi.org/10.1111/j.1755-5922.2010.00246.x

Duello, T. M., Rivedal, S., Wickland, C., & Weller, A. (2021). Race and genetics versus "race" in genetics: A systematic review of the use of African ancestry in genetic studies. *Evolution, Medicine, and Public Health*, *9*(1), 232–245. https://doi.org/10.1093/emph/eoab018

Elhawary, N. A., AlJahdali, I. A., Abumansour, I. S., Elhawary, E. N., Gaboon, N., Dandini, M., Madkhali, A., Alosaimi, W., Alzahrani, A., Aljohani, F., Melibary, E. M., & Kensara, O. A. (2022). Genetic etiology and clinical challenges of phenylketonuria. *Human Genomics*, *16*(1), Article 22. https://doi.org/10.1186/s40246-022-00398-9

Fausto-Sterling, Anne. 2000. Sexing the Body: Gender Politics and the Construction of Sexuality. New York: Basic Books.

Genetic and Rare Diseases Information Center. *Genetic and Rare Diseases Information Center*. U.S. Department of Health and Human Services, National Institutes of Health. https://rarediseases.info.nih.gov/

Genovese, A., & Butler, M. G. (2023). The autism spectrum: Behavioral, psychiatric and genetic associations. *Genes*, *14*(3), Article 677. https://doi.org/10.3390/genes14030677

Gillette, R., Son, M. J., Ton, L., Gore, A. C., & Crews, D. (2018). Passing experiences on to future generations: Endocrine disruptors and transgenerational inheritance of epimutations in brain and sperm. *Epigenetics, 13*(10–11), 1106–1126. https://doi.org/10.1080/15592294.2018.1543506

Gottlieb, S. F., Tupper, C., Kerndt, C. C., Tegay, D. H. (2023, August 14). *Genetics, Nondisjunction*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK482240/

Heijmans, B. T., Tobi, E. W., Stein, A. D., Putter, H., Blauw, G. J., Susser, E. S., Slagboom, P. E., & Lumey, L. H. (2008). Persistent epigenetic differences associated with prenatal exposure to famine in humans. *Proceedings of the National Academy of Sciences*, *105*(44), 17046–17049. https://doi.org/10.1073/pnas.0806560105

Klug, W. S., Cummings, M. R., Spencer, C. A., & Palladino, M. A. (2016). *Concepts of genetics*. Pearson.

Li, J. J., Berk, M. S., & Lee, S. S. (2013). Differential susceptibility in longitudinal models of gene-environment interaction for adolescent depression. *Development and Psychopathology*, *25*(4pt), 991–1003. https://doi.org/10.1017/S0954579413000321

Li, Y., Chen, G. Moon, J., Arthur, R. Sotres-Alvarez, D. Daviglus, M. L., Pirzada, A., Mattei, J., Perreira, K. M., Rotter, J. I., Taylor, K. D., Chen, Y. I., Wassertheil-Smoller, S., Wang, T., Rohan, T. E., Kaufman, J. D., Kaplan, R., Qi, Q. (2024). Genetic subtypes of prediabetes, healthy lifestyle, and risk of type 2 diabetes. *Diabetes*, *73*(7), 1178–1187. https://doi.org/10.2337/db23-0699

Mayhew, A. J., & Meyre, D. (2017). Assessing the heritability of complex traits in humans: Methodological challenges and opportunities. *Current Genomics*, *18*(4), 332–340. https://doi.org/10.2174/1389202918666170307161450

Moore, L. D., Le, T., & Fan, G. (2012). DNA methylation and its basic function. *Neuropsychopharmacology*, *38*, 23–38. https://doi.org/10.1038/npp.2012.112

National Human Genome Research Institute. (2013, December, 27). *About cystic fibrosis*. National Institutes of Health. https://www.genome.gov/Genetic-Disorders/Cystic-Fibrosis

National Human Genome Research Institute. (2014, August, 21). *About phenylketonuria*. National Institutes of Health. https://www.genome.gov/Genetic-Disorders/Phenylketonuria

National Human Genome Research Institute. (2020a, May, 26). *About sickle cell disease*. National Institutes of Health. https://www.genome.gov/Genetic-Disorders/Sickle-Cell-Disease

National Human Genome Research Institute. (2020b, August 11). *Polygenic risk scores*. National Institutes of Health. https://www.genome.gov/Health/Genomics-and-Medicine/Polygenic-risk-scores

National Human Genome Research Institute. (2022, August 16). *A brief guide to genomics*. National Institutes of Health. https://www.genome.gov/about-genomics/fact-sheets/A-Brief-Guide-to-Genomics

National Human Genome Research Institute. (2024, August 9). *Codominance*. National Institutes of Health. https://www.genome.gov/genetics-glossary/Codominance

National Organization for Rare Disorders (n.d.). https://rarediseases.org/rare-diseases

National Scientific Council on the Developing Child (2010). *Early experiences can alter gene expression and affect long-term development* [White paper]. Harvard University Center on the Developing Child. https://developingchild.harvard.edu/resources/early-experiences-can-alter-gene-expression-and-affect-long-term-development/

Omoto, C. K., & Lurquin, P. F. (2004) Genes and DNA: A beginner's guide to genetics and its applications. *Inheritance of single-gene traits* and *Mendelian traits in humans*. Columbia University Press.

Plomin R., DeFries J., & Fulker D. (1977). Genotype–environment interaction and correlation in the analysis of human behavior. *Psychological Bulletin, 84*(2), 309–322. https://doi.org/10.1037/0033-2909.84.2.309
Plomin, R., & von Stumm, S. (2018). The new genetics of intelligence. *Nature Reviews Genetics*, *19*, 148–159. https://doi.org/10.1038/nrg.2017.104
Power, R. A., & Pluess, M. (2015). Heritability estimates of the Big Five personality traits based on common genetic variants. *Translational Psychiatry*, *5*, Article e604. https://doi.org/10.1038/tp.2015.96
Ramani, P. K., & Sankaran, B. P. (2023). *Tay-Sachs disease*. StatsPearl Publishing. https://www.ncbi.nlm.nih.gov/books/NBK564432/
Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of genotype environment effects. *Child Development*, *54*(2), 424–435. https://doi.org/10.2307/1129703
Schrempft, S., van Jaarsveld, C. H. M., Fisher, A., Herle, M., Smith, A. D., Fildes, A., & Llewellyn, C. H. (2018). Variation in the heritability of child body mass index by obesogenic home environment. *JAMA Pediatrics, 172*(12), 1153–1160. https://doi.org/10.1001/jamapediatrics.2018.1508
Skuse, D., Printzlau, F., & Wolstencroft, J. (2018). Sex chromosome aneuploidies. *Handbook of Clinical Neurology, 147*, 355–376. https://doi.org/10.1016/b978-0-444-63233-3.00024-5
Sullivan, P. F., Neale, M. C., & Kendler, K. S. (2000). Genetic epidemiology of major depression: Review and meta-analysis. *American Journal of Psychiatry, 157*(10), 1552–1562. https://doi.org/10.1176/appi.ajp.157.10.1552
Tam, V., Patel, N., Turcotte, M., Bossé, Y., Paré, G., & Meyre, D. (2019). Benefits and limitations of genome-wide association studies. *Nature Review Genetics*, *20*, 467–484. https://doi.org/10.1038/s41576-019-0127-1
Targum, S. D., & Lang, W. (2010). Neurobehavioral problems associated with Phenylketonuria. *Psychiatry, 7*(12), 29–32. https://pubmed.ncbi.nlm.nih.gov/21274394
Tick, B., Bolton, P., Happé, F., Rutter, M., & Rijsdijk, F. (2015). Heritability of autism spectrum disorders: A meta-analysis of twin studies. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *57*(5), 585–595. https://doi.org/10.1111/jcpp.12499
Toraño, E. G., García, M. G., Fernández-Morera, J. L., Niño-García, P., & Fernández, A. F. (2016). The Impact of external factors on the epigenome: In utero and over lifetime. *BioMed Research International*, *2016*, Article 2568635. https://doi.org/10.1155/2016/2568635
Turecki, G., & Meaney, M. J. (2016). Effects of the social environment and stress on glucocorticoid receptor gene methylation: A systematic review. *Biological Psychiatry, 79*(2), 87–96. https://doi.org/10.1016/j.biopsych.2014.11.022
U.S. Centers for Disease Control and Prevention. (2024a, May, 15). *Data and statistics on fragile X syndrome*. Department of Health and Human Services. https://www.cdc.gov/fragile-x-syndrome/data/index.html
U.S. Centers for Disease Control and Prevention. (2024b, May 16). *Birth defects*. Department of Health and Human Services. https://www.cdc.gov/birth-defects/about/down-syndrome.html
U.S. Food and Drug Administration. (2023, December, 8). *FDA approves first gene therapies to treat patients with sickle cell disease*. U.S. Department of Health and Human Services. https://www.fda.gov/news-events/press-announcements/fda-approves-first-gene-therapies-treat-patients-sickle-cell-disease
Verhulst, B., Neale, M. C., & Kendler, K. S. (2014). The heritability of alcohol use disorders: A meta-analysis of twin and adoption studies. *Psychological Medicine*, *45*(5), 1061–1072. https://doi.org/10.1017/s0033291714002165
Villicaña, S., & Bell, J. T. (2021). Genetic impacts on DNA methylation: Research findings and future perspectives. *Genome Biology*, *22*, Article 127. https://doi.org/10.1186/s13059-021-02347-6
Widaman K. F. (2009). Phenylketonuria in children and mothers: Genes, environments, behavior. *Current Directions in Psychological Science*, *18*(1), 48–52. https://doi.org/10.1111/j.1467-8721.2009.01604.x

2.2 Reproductive Systems and Conception

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the basic anatomy and functions of the female and male reproductive systems
- Explain how conception takes place
- Identify various pathways to parenthood

Alex and his husband Brian share a dream of having a family of their own. Aware that they may face challenges, they research options and seek advice from friends and family. Ultimately, the couple decides to explore assisted reproduction and surrogacy. They attend fertility clinics, consult with specialists, and determine that they will use Alex's sperm due to a genetic disorder on Brian's side. The final step is meeting with potential surrogates. Each step is accompanied by its share of uncertainties. After a series of hopeful moments and a few heart-wrenching setbacks, Alex and Brian finally receive the news they have been yearning for—they are expecting a child.

The organs and hormones that make up the reproductive systems of biological males and females work to create a new human being, whether the biological parents conceive on their own, use reproductive assistance, or engage a surrogate or sperm or egg donation. Puberty determines when reproductive systems are mature enough to create and, in the case of biological females, to support the growth of another life. In this section, you will learn about the basic components of the reproductive systems and how conception occurs.

The Female and Male Reproductive Systems

The biological male and female reproductive systems have many similarities. Both males and females have gonads (testes or ovaries), and both produce gametes (sperm or ova). Further, both reproductive systems have similar internal features that allow for gametes to be transported—the fallopian tubes and vans deferens—as well as external features that facilitate sexual intercourse and orgasm (penis and vulva) (Figure 2.12).

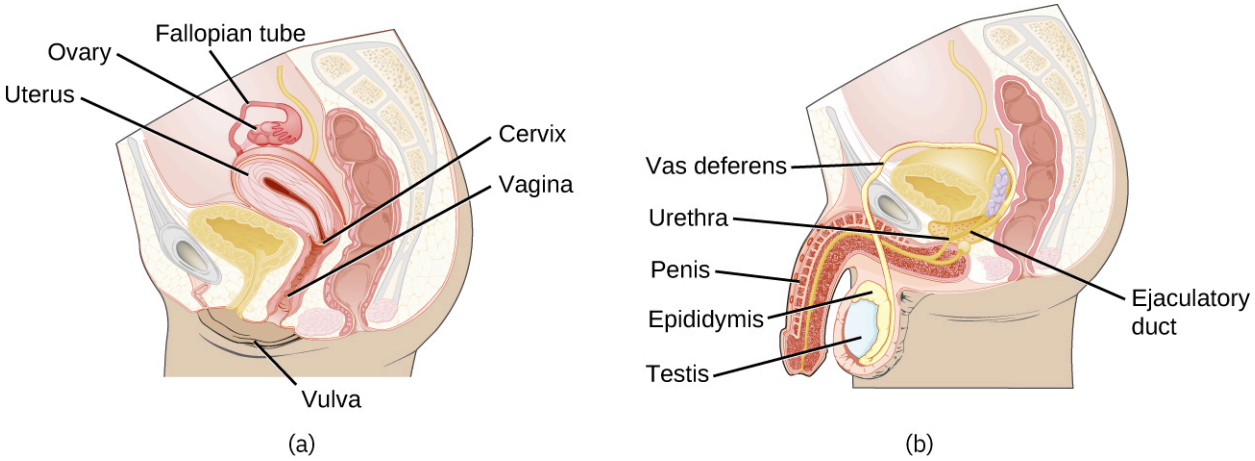


FIGURE 2.12 The (a) female reproductive system and the (b) male reproductive system exhibit differentiated features that perform similar functions. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The Female Reproductive System

The main components of the female reproductive system are the ovaries, fallopian tubes, uterus, cervix, and vagina. The **ovaries** contain ova, or eggs, which are gamete cells carrying the genetic information of the biological female. Biological females have two ovaries, one on each side of the uterus. Each **fallopian tube** runs from an ovary to the uterus and transports fertilized ova to the uterus. The **uterus**, also called the womb, is the organ in which the fetus develops. At the lower end of the uterus is the cervix, which connects the uterus with the **vagina**, the muscular canal that leads to the outside of the body. The vagina is not visible on the outside of the body; however, the **vulva**, consisting of the external aspects of the female reproductive system (including the labia, clitoris, and vaginal opening), is visible.

Most biological females experience a menstrual cycle, a monthly process of hormonal shifts that make conception possible, lasting approximately twenty-eight days. This cycle has four phases: menstruation, follicular, ovulatory, and luteal. During the follicular phase, several eggs develop until one (or more) is released in a process called ovulation. Ovulation typically happens around the fourteenth to the sixteenth day of a cycle (day one of each cycle is the first day of the preceding period) although much variation in the timing exists among individuals (Grieger & Norman, 2020). During the luteal phase, the uterus creates a layer called the endometrium, which is rich with nutrients to help sustain a fertilized egg. If the egg is not fertilized, it dissolves, and the endometrial lining of the uterus is shed during menstruation. The cycle then begins again.

The Male Reproductive System

The major parts of the male reproductive system are the testes, penis, vas deferens, urethra, and ejaculatory ducts (refer to Figure 2.12). These components help create and maintain the health of sperm, which are the male gametes that merge with ova during fertilization, causing conception. The male reproductive system also assists in the introduction of sperm into the female reproductive tract during intercourse.

The top of the penis marks the beginning of the male **urethra**, which releases sperm at the moment of ejaculation, or male orgasm. For conception to occur during vaginal intercourse, the penis and urethra must deposit sperm into the vagina. The scrotum is located below the penis and contains the **testes**, which produce sperm and testosterone. The **vas deferens** transports sperm from the testes to the urethra. Near the back of each testis is the epididymis, a tube that stores sperm until they are mature.

During any type of sexual activity, sperm is moved from the epididymis, via the vas deferens and ejaculatory duct, to the urethra. The urethra, in males and females, is also responsible for releasing urine. However, increased blood flow from arousal prevents urine from flowing through the urethra during sexual activity.

Conception

The union of sperm and ovum, or gametes, to create a new organism is called **conception** (Figure 2.13). For conception to occur, the gametes from a biological male and female must meet. This occurs most commonly during vaginal intercourse when sperm is ejaculated into the vagina.

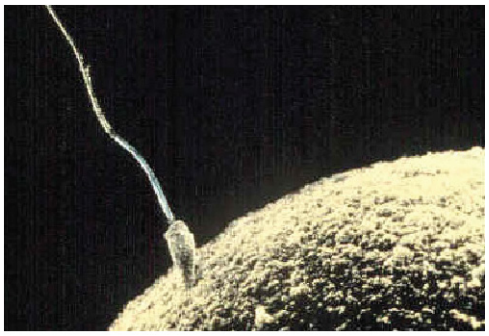


FIGURE 2.13 A sperm enters an egg at the point of conception. (credit: modification of work "Sperm-egg" by PD Images/Wikimedia Commons, Public Domain)

The release of the egg is mediated by hormones, specifically, luteinizing hormone. A **hormone** is a chemical released by glands within the human body that alters and controls aspects of bodily function. If an egg is fertilized, it typically travels down the fallopian tube to the uterus where it implants into the uterine wall and eventually develops into an embryo before eventually developing into a fetus. The female's body also releases the hormone progesterone (or it is provided if using fertility treatments), which helps thicken the endometrial lining and is necessary for successful implantation of the fertilized egg and thereby pregnancy.

Once sperm enter the vagina, they travel through the cervix and cervical mucus to reach the uterus. Sperm encounter acidic conditions in the vagina and create a coating that protects them and helps them to survive in that environment (Suarez & Pacey, 2005). Sperm that survive the journey to the uterus will be directed toward the fallopian tubes via contractions in the uterus. Sperm can survive up to five days within the female reproductive system, though the egg is able to be fertilized for only about twelve hours after release (University of California San Francisco Health, 2024). Many sperm will travel to the fallopian tubes to reach the egg, but only one sperm can penetrate it (Suarez & Pacey, 2005). Once fertilization occurs, the egg becomes impenetrable and the remaining sperm die off.

Pathways to Parenthood

For people to conceive, the likelihood of achieving pregnancy varies due to multiple factors including the age, fertility, and health of the biological parents. Many people conceive without actively planning or intending to; still others take direct steps to delay or prevent pregnancy. Many couples can get pregnant within one year of trying to conceive, but only about 30 percent of people under age thirty years get pregnant during the first three months (Taylor, 2003; WHO, 2024). If someone has been trying to conceive for at least one year without success, they may have fertility challenges.

Today's medical professionals can assist many people with fertility concerns. Many types of families, including single individuals and individuals in same-sex relationships, have pathways to parenthood including assisted reproductive technology (ART) or the use of donor eggs and/or sperm. For those who do not wish to undergo such treatments (or for whom the treatments aren't successful), other routes to parenthood include surrogacy and adoption. These options are expensive, however, and are often not covered by insurance.

Causes of Infertility

The clinical term **infertility** describes a condition in which someone has not successfully conceived after trying for at least one year. According to research, approximately 15 percent of females and 11 to 12 percent of males have some form of infertility (Borumandnia et al., 2022; Nugent & Chandra, 2024). The cause may be

fertility issues in the female, the male, or both parties, or unknown causes (Borumandnia et al., 2022; Nugent & Chandra, 2024). Many fertility challenges can be addressed medically; however, success of those treatments varies among individuals.

Male infertility can be caused by hormonal irregularity and blockages within any of the organs of the male reproductive system. Or, the sperm may have low motility, preventing them from moving effectively and traveling through the female reproductive tract (Leslie et al., 2024). However, nearly half of all cases of male infertility occur from unknown causes (Leslie et al., 2024).

INTERSECTIONS AND CONTEXTS

Access to Fertility Treatments across the Globe

According to the World Health Organization (WHO), at least one in six individuals across the globe deals with infertility at some point in their life (World Health Organization, 2024). Fertility problems do not discriminate; they can affect individuals at all income levels, all ethnicities, and all ages. What does differ among those dealing with infertility, however, is access to fertility treatments (World Health Organization, 2024).

According to Fauser et al. (2019; 2024), collecting data about fertility treatments globally has been difficult until recently, because not all nations publish data on their number of fertility centers or assisted reproduction procedures. Most procedures are performed in Asia and Europe, possibly because the associated costs are lower in these regions. Some countries in Europe, such as Denmark, may financially help individuals with the cost of fertility treatments. Africa appears to have the fewest facilities and procedures, possibly due to underreporting, because only forty fertility centers from thirteen of the continent's fifty-four countries participated in data collection (Fauser et al., 2019; Fauser et al., 2024).

Practitioners of fertility treatments in the United States perform half as many procedures as their European colleagues and charge the highest fees, which are typically not covered by insurance. In vitro fertilization (IVF), a medical intervention to aid in producing a successful pregnancy, can cost more than $15,000 per attempt in the United States. In some countries, age may also be a barrier to fertility treatments. Sweden does not allow women over forty-two years of age to use these methods, and women from Denmark lose access at age forty-six years (Fauser et al., 2019).

Not only can IVF treatments be expensive, but they can also be time-intensive, requiring many visits for lab work and they may involve physical discomfort. This makes the process difficult to take on several levels, even when it is available. In many parts of the world, especially in rural areas, the distance to the nearest fertility clinic may be prohibitive as well. So, while medical ART and the understanding of fertility have grown dramatically, there remains unequal access to helpful resources.

Some common fertility problems for females are blocked fallopian tubes, uterine abnormalities, endometriosis, and polycystic ovary syndrome (PCOS), the most frequent challenge. In PCOS, a hormone imbalance results in higher levels of androgens (sex hormones) that can also cause small cysts on the ovaries and irregular menstruation (Rocha et al., 2019). The fallopian tubes can become blocked for many reasons, including from scar tissue from previous surgery, infections, sexually transmitted diseases, fibroids, and endometriosis (Ambildhuke et al., 2022). Uterine fibroids are abnormal noncancerous growths that may be hereditary and are sensitive to estrogen and progesterone. Though the cause of fibroids is not known, several factors increase the risk of developing them, including family history, obesity, early onset of menstruation, heavy drinking, and race, given that fibroids tend to occur more frequently in Black women (Office on Women's Health, 2021). Endometriosis is a painful condition in which the uterine lining, the endometrium, grows outside the uterus. In PCOS, a hormone imbalance, results in higher levels of androgens (sex hormones) that can also cause small cysts on the ovaries and irregular menstruation (Rocha et al., 2019). Many of these fertility problems can be detected early and treated through advances in ART.

Fertility Treatments

Most fertility treatments rely on ART (Pakhomov et al., 2021). Some of the most common are ovulation induction, intrauterine insemination, and IVF. Ovulation induction uses medications to stimulate ovulation in individuals who are not ovulating regularly. A doctor will assess the eggs using an intrauterine ultrasound on the tenth or eleventh day of the menstrual cycle. Once the eggs are mature, an injection of human chorionic gonadotrophin (hCg) will be used to stimulate ovulation (Sharma & Balasundaram, 2022).

Intrauterine insemination (IUI) is often helpful when a low sperm count or weak sperm is an issue, or when single individuals or same-sex couples wish to conceive. After ovulation occurs, sperm are placed directly into the uterus. A process called washing ensures the healthiest sperm provided are used (Allahbadia, 2017). The process of **in vitro fertilization (IVF)** combines sperm with one or more eggs from a biological female in a laboratory and allows them to divide for a time before placing one or more fertilized eggs into the uterus of the patient undergoing treatment (Pakhomov et al., 2021).

All these fertility treatments carry some risks. For example, when using fertility drugs to stimulate egg production, individuals may experience mild side effects (bloating, nausea, hot flashes), or more severe side effects such as ovarian hyperstimulation syndrome (painful swelling of the ovaries) and an increased chance of ectopic pregnancies (in which the embryo implants within the fallopian tube instead of the uterus) (Pakhomov et al., 2021). The use of fertility drugs for these procedures also increases the likelihood of carrying twins or triplets. Finally, higher rates of preterm births, low birth weight, and birth defects (such as spinal bifida, congenital heart issues, cerebral palsy) are associated with ART (von Wolff & Haaf, 2020).

LINK TO LEARNING

Learn more about many of the intricacies of the IVF fertilization process (https://openstax.org/r/104IVFfertliiz) in this TED-Ed video.

Surrogacy and Adoption

Some people experiencing infertility may consider surrogacy or adoption (Figure 2.14). In surrogacy, those who wish to become parents partner with someone who is willing to carry a fetus and give birth. Surrogates typically undergo IVF to become pregnant; however, in some cases, it is possible for them to become pregnant using IUI (intrauterine insemination), which allows sperm to be placed directly in the uterus. The implanted embryo may result from the egg and sperm of the couple desiring to be parents or from donor eggs and/or sperm. Some people use agencies to help them find suitable surrogates, and renumeration and coverage of medical expenses are typically included in the legal contract between the surrogate and the prospective parents.

Individuals and couples can also adopt children whose biological parents have voluntarily placed them for adoption or lost their parental rights. Adoption often takes place with the assistance of adoption agencies. Individuals can also foster children through foster care systems in many countries. These children may or may not be eligible for adoption when the placement happens, or they may become eligible later. Other forms of adoption include familial adoption, in which a child is adopted by a relative, and international adoption. International adoption may bring unique challenges depending on qualifications potential parents must meet to adhere to government policies.

(a) (b)

FIGURE 2.14 (a) Surrogacy, in which a child is carried and birthed on behalf of another, and (b) adoption, in which a person legally assumes parenting responsibilities for a nonbiological child, are options for building families outside traditional childbirth methods. (credit a: modification of work "Surrogate parents attending birth" by Staff Sgt. Delia Martinez/Wikimedia Commons, Public Domain; credit b: modification of work "Hold Me Mother, 2018" by Felipe Fittipaldi/Wikimedia Commons, CC BY 4.0)

Unintended Pregnancies

According to the United Nations Population Fund, approximately 121 million unintended pregnancies occur worldwide each year (Baker et al., 2022). These happen for multiple reasons, including lack of access to contraceptives, reproductive care, and/or education and sex education; sexual violence against females; and cultural norms suggesting that women need to have children (Baker et al., 2022).

In the United States, around 40 percent of all pregnancies are reported as being unintended (CDC, 2024). However, the number varies dramatically across different groups. Adolescent pregnancies (in those aged fifteen to nineteen years) account for the majority of unintended pregnancies; women between eighteen and twenty-four years of age who had incomes at or below poverty level, did not complete high school, and were Hispanic or Black also had high numbers of unintended pregnancies (U.S. Centers for Disease Control and Prevention, 2024).

IT DEPENDS

Is Pregnancy Prevention Common Knowledge?

A recent report from the United Nations Population Fund estimated that at least half of all pregnancies worldwide each year are unintended (Baker et al., 2022). This means millions of women are conceiving who did not plan to get pregnant. According to Bearak et al. (2020), around 61 percent of unintended pregnancies worldwide in women between ages fifteen and forty-nine years end in abortions that are unsafe, illegal, or both. In developing countries, unsafe abortions resulted in nearly 200,000 maternal deaths between 2003 and 2009. They also forced the hospitalization of seven million women and likely cost more than $550 million in follow-up treatment (Bearak et al., 2020).

Among the reasons for unintended pregnancies globally are misinformation about contraception and lack of access to contraceptive methods and education. Many young people all over the world depend on friends for advice about preventing pregnancy because discussing the topic with family can be difficult. Without access to sex education, myths and misinformation abound, including the idea that contraceptives (such as birth control pills or intrauterine devices [IUDs]) may harm future fertility or decrease sexual desire, that early withdrawal or

urination after intercourse prevents conception, that certain positions may decrease the chance of conceiving, and that avoiding intercourse around the time of ovulation prevents pregnancy (Lundsberg et al., 2014; Mwaisaka et al., 2020). Lundsberg et al. (2014) found that more than 40 percent of U.S. women in their study did not know when ovulation typically occurs.

These and other misconceptions can be dispelled with sex education and increased access to information about contraception. According to Lundsberg et al. (2014), most women in their study said they would ask their women's health-care provider about pregnancy, followed by websites; however, most admitted not asking their provider any questions. Though many had concerns about their fertility, pregnancy and conception were thought to be private and awkward to discuss. Providing more access to sex education and to contraceptives may help decrease the high number of unintended pregnancies globally, as well as making sex education more common.

Birth Control and Family Planning

The use of **contraception**, a method to prevent conception, has been steadily increasing each year on every continent except Oceania and North America, although North America reports the highest use of contraception of all continents (Ponce de Leon et al., 2019). The largest increase in contraceptive use occurred in Africa, although there it remains the lowest rate of all continents (Ponce de Leon et al., 2019). That increase has been slow, likely due to limits on contraceptive choices, lack of access to reproductive health services for individuals living at or below the poverty level, cultural or religious resistance, and even bias against some methods among reproductive health providers (WHO, 2023).

In the United States, common forms of contraception include birth control pills (oral contraceptives), IUDs, birth control implants, contraceptive patches, injections of hormones such as Depo-Provera, external condoms, and vasectomy. Other less commonly used forms include internal condoms, spermicides, and sponges or diaphragms. Currently, the only form of permanent birth control available to males is vasectomy. Vasectomies are one of the most effective forms of birth control and carry a very low risk of negative side effects compared to all other contraception types (Araújo et al., 2022). While people sometimes have anxiety about this procedure, evidence indicates vasectomy is safe and does not negatively affect sexual function (Yang et al., 2020). Each type of contraception has a different level of effectiveness and different side effects (Table 2.4).

Type of Contraception	Description	Success Rate at Preventing Pregnancy (%)
Vasectomy	Surgical procedure where the tubes carrying sperm are cut and sealed	99
Birth control implant	Device placed under the skin in a female	99
Tubal ligation or salpingectomy	Surgical procedure where the fallopian tubes are closed off or partially or fully removed	99
intrauterine device (IUD)	Device placed into uterus by a doctor	99

TABLE 2.4 Types of Birth Control and Their Success Rates (source: Centers for Disease Control and Prevention [CDC], 2024)

Type of Contraception	Description	Success Rate at Preventing Pregnancy (%)
Birth control pill	Hormone pills taken daily	93
Birth control patch	Placed on skin of a female, a patch that delivers hormones	93
External condom	Sheath that fits over the penis to prevent sperm transfer; also helps prevent sexually transmitted infections but comes with a higher likelihood of errors in effective use (Barrett et al., 2021)	87

TABLE 2.4 Types of Birth Control and Their Success Rates (source: Centers for Disease Control and Prevention [CDC], 2024)

References

Allahbadia G. N. (2017). Intrauterine insemination: Fundamentals revisited. *Journal of Obstetrics and Gynecology of India, 67*(6), 385–392. https://doi.org/10.1007/s13224-017-1060-x

Ambildhuke, K., Pajai, S., Chimegave, A., Mundhada, R., & Kabra, P. (2022). A review of tubal factors affecting fertility and its management. *Cureus, 14*(11), Article e30990. https://doi.org/10.7759/cureus.30990

Araújo, D. C., Gromicho, A., Pereira, D., Marramaque, C., Bastos, S., Dias, J., & Ferraz, L. (2022). Vasectomy: Why not the first option in final sterilization? [Supplemental material] *The Journal of Sexual Medicine, 19*(11), S102–S103. https://doi.org/10.1016/j.jsxm.2022.10.147

Baker, D., Keogh, S., Luchsinger, G., Roseman, M., Sedgh, G., Solo, J. (2022). *Seeing the unseen: The case for action in the neglected crisis of unintended pregnancy* [White paper]. State of World Population 2022. United Nations Population Fund. https://www.unfpa.org/sites/default/files/pub-pdf/EN_SWP22%20report_0.pdf

Barrett, M., Laris, B. A., Anderson, P., Baumler, E., Gerber, A., Kesler, K., & Coyle, K. (2021). Condom use and error experience among young adolescents: implications for classroom instruction. *Health promotion practice, 22*(3), 313–317. https://doi.org/10.1177/1524839920935431

Bearak, J., Popinchalk, A., Ganatra, B., Moller, A.-B., Tunçalp, Ö., Beavin, C., Kwok, L., & Alkema, L. (2020). Unintended pregnancy and abortion by income, region, and the legal status of abortion: Estimates from a comprehensive model for 1990–2019. *The Lancet Global Health, 8*(9), e1152–e1161. https://doi.org/10.1016/S2214-109X(20)30315-6

Borumandnia, N., Alavi Majd, H., Khadembashi, N., & Alaii, H. (2022). Worldwide trend analysis of primary and secondary infertility rates over past decades: A cross-sectional study. *International Journal of Reproductive Biomedicine, 20*(1), 37–46. https://doi.org/10.18502/ijrm.v20i1.10407

Centers for Disease Control and Prevention. (2024, August 6). Contraception and Birth Control Methods. U.S. Department of Health and Human Services. https://www.cdc.gov/contraception/about/index.html

Fauser, B. C. J. M., Adamson, G. D., Boivin, J., Chambers, G. M., de Geyter, C., Dyer, S., Inhorn, M. C., Schmidt, L., Serour, G. I., Tarlatzis, B., Zegers-Hochschild, F., & Contributors and members of the IFFS Demographics and Access to Care Review Board (2024). Declining global fertility rates and the implications for family planning and family building: an IFFS consensus document based on a narrative review of the literature. *Human reproduction update, 30*(2), 153–173. https://doi.org/10.1093/humupd/dmad028

Fauser, B. C. J. M., Boivin, J., Barri, P. N., Tariatzis, B. C., Schmidt, L. & Levy-Toledano, R. (2019). Beliefs, attitudes, and funding of assisted reproductive technology: Public perception of over 6,000 respondents from 6 European countries. *PLoS ONE, 14*(1), Article e0211150. https://doi.org/10.1371/journal.pone.0211150

Grieger, J. A., & Norman, R. J. (2020). Menstrual cycle length and patterns in a global cohort of women using a mobile phone app: Retrospective cohort study. *Journal of Medical Internet Research, 22*(6), Article e17109. https://doi.org/10.2196/17109

Leslie, S. W., Soon-Sutton, T. L., & Khan, M. A. (2024). *Male Infertility*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK562258/

Lundsberg, L. S., Pal, L., Gariepy, A. M., Xu, X., Chu, M. C., & Illuzzi, J. L. (2014). Knowledge, attitudes, and practices regarding conception and fertility: A population-based survey among reproductive-age United States women. *Fertility and Sterility, 101*(3), 767–774.e2. https://doi.org/10.1016/j.fertnstert.2013.12.006

Mwaisaka, J., Gonsalves, L., Thiongo, M., Waithaka, M., Sidha, H., Agwanda, A., Mukiira, C., & Gichangi, P. (2020). Exploring contraception myths and misconceptions among young men and women in Kwale County, Kenya. *BMC Public Health, 20*, Article 1694. https://doi.org/10.1186/s12889-020-09849-1

Nugent, C. N., & Chandra, A. (2024). Infertility and impaired fecundity in women and men in the United States, 2015-2019. *National Health Statistics Reports, 202,* 1–19. https://www.cdc.gov/nchs/data/nhsr/nhsr202.pdf

Office on Women's Health. (2021, February 19). *Uterine fibroids*. U.S. Department of Health and Human Services. https://www.womenshealth.gov/a-z-topics/uterine-fibroids

Pakhomov, S. P., Orlova, V. S., Verzilina, I. N., Sukhih, N. V., Nagorniy, A. V., & Matrosova, A. V. (2021). Risk factors and methods for predicting ovarian hyperstimulation syndrome (OHSS) in the in vitro fertilization. *Archives of Razi Institute, 76*(5), 1461–1468. https://doi.org/10.22092%2Fari.2021.356170.1796

Ponce de Leon, R. G., Ewerling, F., Serruya, S. J., Silveira, M. F., Sanhueza, A., Moazzam, A., Becerra-Posada, F., Coll, C. V. N., Hellwig, F., Victora, C. G., & Barros, A. J. D. (2019). Contraceptive use in Latin America and the Caribbean with a focus on long-acting reversible contraceptives: Prevalence and inequalities in 23 countries. *The Lancet Global Health, 7*(2), e227–e235. https://doi.org/10.1016/s2214-109x(18)30481-9

Rocha, A. L., Oliveira, F. R., Azevedo, R. C., Silva, V. A., Peres, T. M., Candido, A. L., Gomes, K. B., & Reis, F. M. (2019). Recent advances in the understanding and management of polycystic ovary syndrome. *F1000Research, 8*, Article 565. https://doi.org/10.12688/f1000research.15318.1

Sharma, M., & Balasundaram, P. (2022). *Ovulation induction techniques*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK574564/

Suarez, S. S., & Pacey, A. A. (2005). Sperm transport in the female reproductive tract. *Human Reproduction Update, 12*(1), 23–37. https://doi.org/10.1093/humupd/dmi047

Taylor A. (2003). ABC of subfertility: Extent of the problem. *BMJ, 327*(7412), 434–436. https://doi.org/10.1136/bmj.327.7412.434

U.S. Centers for Disease Control and Prevention. (2024, May 15). *Unintended Pregnancy*. U.S. Department of Health and Human Services. https://www.cdc.gov/reproductive-health/hcp/unintended-pregnancy/

University of California San Francisco Health. (2024). *Conception: How it works*. https://www.ucsfhealth.org/education/conception-how-it-works

von Wolff, M., & Haaf, T. (2020). In vitro fertilization technology and child health. *Deutsches Ärzteblatt International, 117*(3), 23–30. https://doi.org/10.3238/arztebl.2020.0023

World Health Organization. (2023, September 5). *Family planning/contraception methods*. https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception

World Health Organization. (2024, May 22). *Infertility*. https://www.who.int/news-room/fact-sheets/detail/infertility

Yang, F., Dong, L., Zhang, X., Li, J., Tan, K., Li, Y., & Yu, X. (2020). Vasectomy and male sexual dysfunction risk: A systematic review and meta-analysis. *Medicine, 99*(37), Article e22149. https://doi.org/10.1097/MD.0000000000022149

2.3 Pregnancy and Prenatal Development

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the major periods of prenatal development
- Identify methods used to monitor fetal development
- Identify sources of environmental influence on the embryo/fetus during prenatal development
- Describe the role of parents during pregnancy

When Olivia learned in August that they were pregnant, they joyfully anticipated the arrival of a baby the following April and hoped the baby might share their late father's birthday. Olivia didn't know the exact date of conception, because they had been trying to conceive for several months, so the obstetrician used the first day of the last menstrual period and added two weeks, given that ovulation typically occurs midcycle. However, Olivia's doctor warned her that pregnancies can vary in length, and that very few births occur on the baby's due date (Declercq et al., 2023).

Pregnancies are often divided into three-month periods called trimesters. However, three developmental periods also occur, each marked by major changes and occurring on a different schedule than the trimesters (Figure 2.15). Each developmental period of pregnancy involves important aspects of maternal and paternal health that can influence the health of the pregnancy, environmental factors that can affect the health of an embryo or fetus during pregnancy, and education and behaviors parents can optimize to ensure a healthy pregnancy.

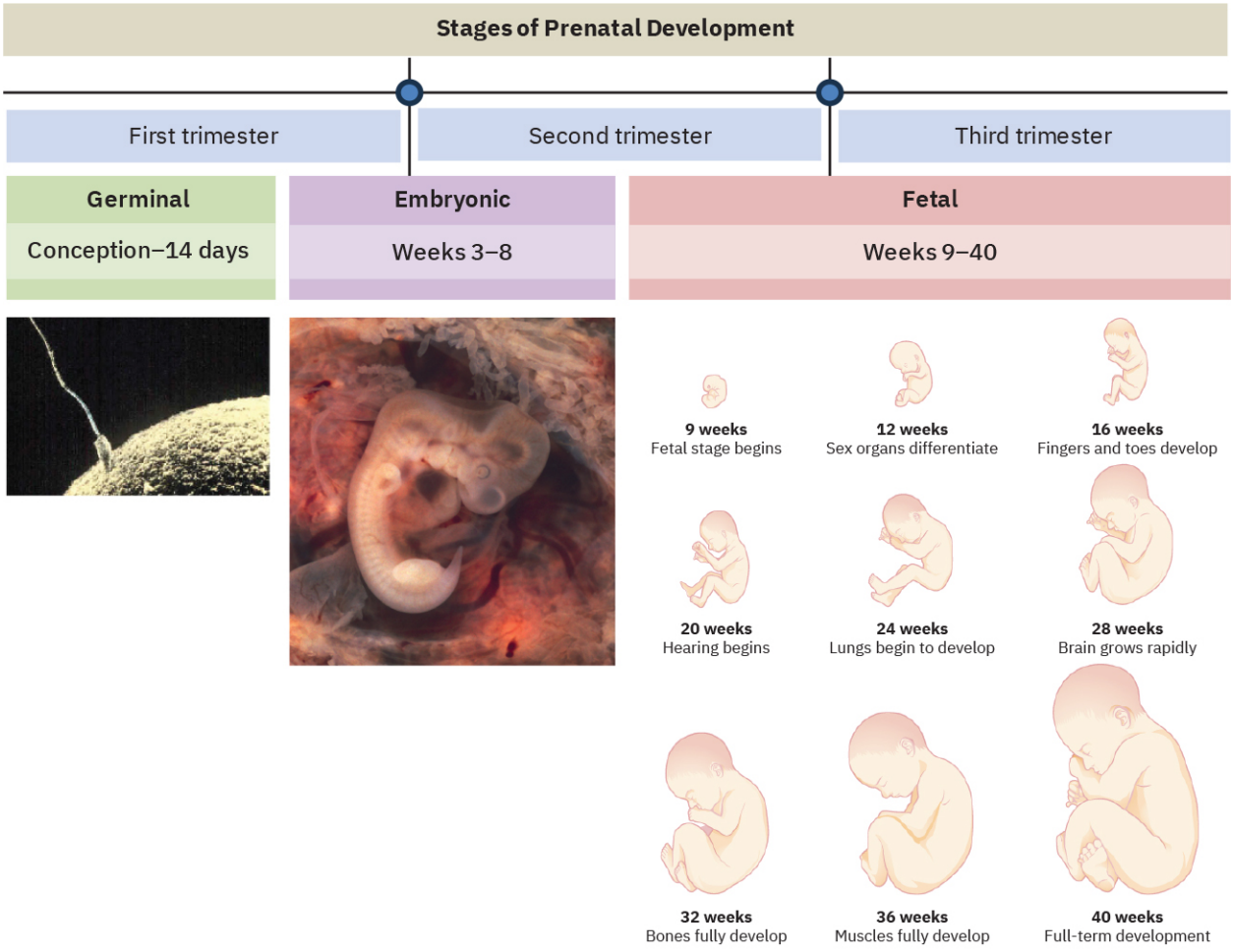


FIGURE 2.15 While pregnancy is often discussed in terms of trimesters, the developing fertilized egg goes through its own three transformative stages: the germinal, embryonic, and fetal stages. (attribution: Copyright Rice

University, OpenStax, under CC BY NC-SA 4.0 license; credit left: modification of work “Sperm-egg” by PD Images/Wikimedia Commons, Public Domain; credit middle: modification of work “Tubal Pregnancy with embryo” by Ed Uthman/Wikimedia Commons, Public Domain)

Prenatal Development and Viability

The three major developmental periods of pregnancy are the germinal period, the embryonic period, and the fetal period. Significant development changes occur during all of these stages, and during the last, the fetus becomes viable outside the womb. Complications, such as exposure to teratogens and congenital disorders, may occur during fetal development.

The Germinal Period

As you’ve learned, conception occurs when a sperm cell enters the ovum and the twenty-three chromosomes in each of the two cells combine, creating a unique new combination of forty-six chromosomes. The single cell formed at conception is called a **zygote**.

The first and shortest of the three developmental periods of pregnancy is the **germinal period**. It starts at conception and lasts approximately two weeks. The zygote starts to divide within twenty-four hours of forming, and around five to seven days later it is a small cluster of a few hundred cells called a **blastocyst**. About a week after conception, the blastocyst starts to form burrlike projections, which help it implant in the uterus after it travels down the fallopian tube. Cell differentiation starts during the germinal period as well.

Cell differentiation is the process in which stem cells, guided by genes, start to specialize or take on characteristics of what they will later become, such as organs, nails, hair, or skin. This is the start of the blastocyst’s transformation into an embryo. One end of the blastocyst turns into the embryoblast, which will eventually become the embryo. The rest develops into a life-support system for the embryo consisting of the placenta, umbilical cord, amnion, and chorion.

The germinal period is also the time during which twins and other multiples are conceived (Figure 2.16). Fraternal or **dizygotic twins** develop when two ova are fertilized at the same time. In the case of identical or **monozygotic twins**, for reasons still not completely understood, the zygote splits into two clusters of cells, creating two genetically identical zygotes (Hall, 2021). In pregnancies that are not due to fertility treatments, there is a 0.4 percent chance of having monozygotic twins (Roberts et al., 2018). That chance increases to a 1.57 to 5.6 percent chance in pregnancies utilizing IVF and other fertility treatments, possibly due to medications and laboratory procedures employed in the IVF process (Roberts et al., 2018).

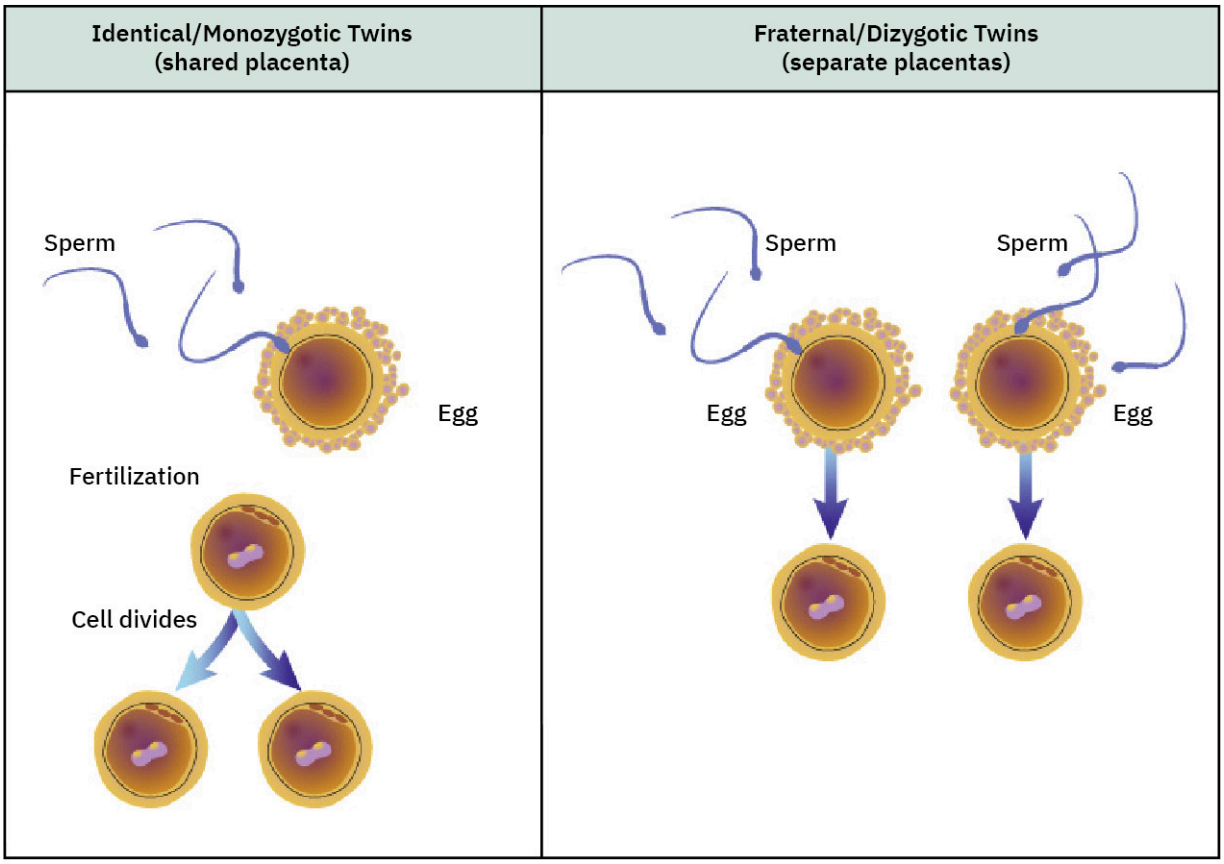


FIGURE 2.16 In the development of identical twins, a zygote splits into two separate but genetically identical zygotes. In the case of fraternal twins, two eggs are fertilized by two separate sperm at the same time. (credit: modification of work "Identical twins lg" by National Human Genome Research Institute/Wikimedia Commons, Public Domain)

By the end of the germinal period, the blastocyst has traveled through the fallopian tube to the uterus, where it implants into the uterine wall. This process is called **implantation**. Successful implantation is not guaranteed, and it's estimated that 15 percent of pregnancies are lost before or during this process (Jarvis, 2020). It is difficult to develop methods to correctly assess the success of implantation without knowing the exact date of conception.

The Embryonic Period

Once implantation has occurred, the blastocyst becomes an embryo, and the **embryonic period** begins. This period lasts from the third to the eighth week of pregnancy. An enormous number of changes happen during this period. After implantation, part of the embryo rapidly forms four major support structures—the amnion, chorion, placenta, and umbilical cord:

- The amnion or amniotic sac is a watertight sac that protects the embryo and is filled with amniotic fluid.
- The chorion gathers nourishment for the embryo and eventually becomes the lining of the placenta.
- The **placenta** is a temporary organ connecting the uterus to the umbilical cord that provides respiration and nourishment for the embryo in addition to eliminating metabolic wastes.
- The **umbilical cord** is a flexible tube connecting the embryo and the placenta; it contains three types of blood vessels that carry nutrients and oxygen from the birth mother to the embryo and transport waste from the embryo to the placenta (Heil & Bordoni, 2022).

Other changes occurring during the embryonic period include **organogenesis**, or the formation of organs. Ongoing cell differentiation allows cells to become specialized to do different jobs. For example, liver cells help

filter out toxins, neural cells help process information, and heart cells beat rhythmically to push blood through the embryonic body. This process begins approximately three weeks after conception, when the embryo starts to differentiate into three distinct components, the ectoderm, mesoderm, and endoderm. The outer layer of the embryo becomes the ectoderm, and cell differentiation allows it to start developing the nervous system, skin, and hair. The middle layer of the embryo, the mesoderm, develops into muscles, bones, and the circulatory system. The innermost layer of cells within the embryo becomes the endoderm and develops into the organs of the digestive system, the lungs, and the urinary tract.

LINK TO LEARNING

Watch this TED talk discussing prenatal development (https://openstax.org/r/104EmbryoDevelp) to learn more about how embryos develop.

The Fetal Period

The last seven months of pregnancy are a period of organ growth and refinement called the **fetal period**. During this time, the fetus grows quickly. Around seventeen to twenty weeks after conception, lanugo and vernix develop (Verhave & Lappin, 2018). Vernix is a white cheese-like substance that helps protect the skin from chafing in the amniotic fluid. Lanugo is a soft, thin hair that helps vernix stick to the skin of the fetus in addition to helping protect the skin itself. Both lanugo and vernix usually disappear between the thirty-third and thirty-sixth weeks of pregnancy (Verhave & Lappin, 2018).

Growth occurs in several directions both prenatally and after birth. Growth that occurs from head to feet is called **cephalocaudal growth**, whereas **proximodistal growth** occurs from the center of body outward. Cephalocaudal growth allows the fetus to grow longer, whereas proximodistal growth is exemplified by infants being able to control their arm movements before their fingers. In **mass-to-specific growth**, large movements and structures develop before smaller or more specified movements and structures.

The Age of Viability

The more time the fetus spends inside the womb, the greater its chance of survival. The **age of viability** is the age at which a fetus born prematurely (before the thirty-seventh week of pregnancy) may have a chance of survival outside the womb, usually with intensive medical intervention (Jang & Lee, 2022). In the United States, the earliest age of viability is generally considered to be the twenty-fifth week of pregnancy. However, the age of viability has changed over the years and is not the same from country to country. Medical systems and resources vary from place to place. Not all neonatal intensive care units (NICUs) can handle babies born at or before twenty-five weeks of gestation. Extremely premature babies require extensive medical care to survive and may also have long-term cognitive and/or physical issues.

The earliest known surviving infant was born at twenty-one weeks' gestation; others have survived after being born at twenty-two weeks' gestation. All required intensive medical treatment to survive because several important systems were not sufficiently developed, including the lungs (American College of Obstetricians and Gynecologists, 2023). Babies born near the lower limits of the age of viability have an increased risk of neurological and other health issues, including heart and lung problems later in life (Jobe, 2022). It is estimated that approximately 50 percent of babies born before twenty-four weeks' gestation may survive, but none without intensive medical intervention (Thomas & Asztalos, 2021).

Complications in Prenatal Development

Sometimes issues develop during a pregnancy that can lead to **spontaneous abortion**, which is the loss of a pregnancy during the first twenty weeks. Spontaneous abortion, often called miscarriage, is the most common pregnancy complication and is estimated to occur in approximately 15 percent of all pregancies (Laisk et al., 2020). Of those lost pregnancies, about 60 percent terminate during the germinal period due to the embryo's failure to grow or implant properly. About 20 percent of those miscarriages occur between weeks six and ten of

gestation, in the embryonic stage.

Spontaneous abortions during the germinal and embryonic stages are believed to often be due to chromosomal abnormalities. During the fetal stage, around 5 percent of pregnancies result in a spontaneous abortion or stillbirth, the death of the fetus after twenty-eight weeks. Other risk factors include advanced maternal age, history of past miscarriages, certain chronic diseases, and chronic stress (Alves et al., 2023).

Spontaneous abortion is most likely to occur for reasons outside the birth mother's control. In the United States, low socioeconomic status and lack of access to health care are associated with an increased risk of miscarriage (Oliveira et al., 2020). A much lower risk of fetal loss, approximately 1.39 percent globally, exists for stillbirths (Hug et al., 2021). Global public health efforts, including by the WHO, have helped reduce this risk (Hug et al., 2021).

LINK TO LEARNING

Explore the March of Dimes website on miscarriage (https://openstax.org/r/104Miscarriage) that describes different types of spontaneous abortions, reasons they may occur, and warning signs of possible pregnancy loss.

Teratogens

Any disease, drug, or other environmental agent that can harm the embryo or the fetus physically or influence health or behavior after birth is called a **teratogen**. Generally, the influence of a teratogen on a body part is strongest when that part is developing, such as during organogenesis (Figure 2.17). After organs have formed, they are usually less vulnerable to teratogens, except for the nervous system, which always susceptible. Limb formation and other aspects of prenatal development show varied critical and sensitive periods for risk of harm from teratogens.

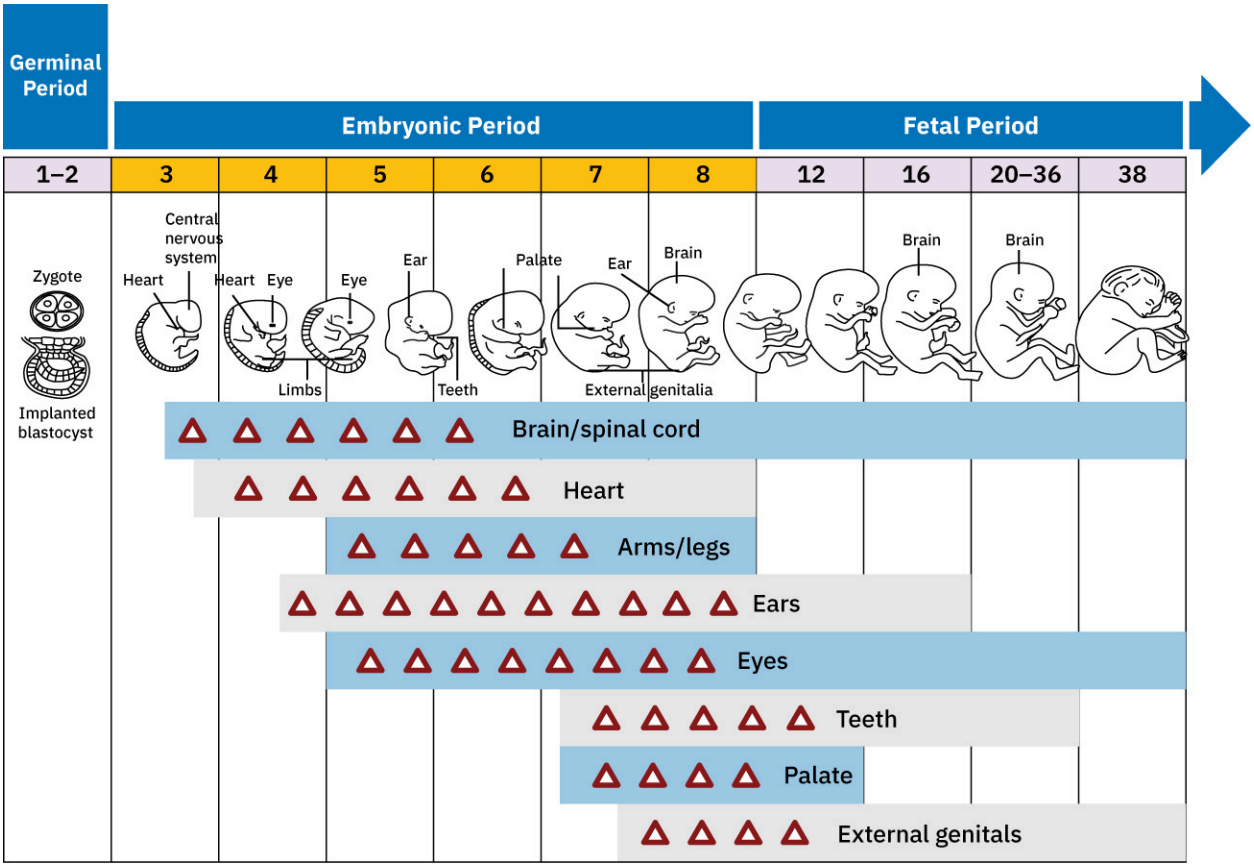


FIGURE 2.17 Prenatal development includes developmental periods during which different features of growth are sensitive to teratogens. (credit: modification of work "Figure 1. Sensitivity to teratogens during pregnancy" by Mehmet Semih Demirtaş/IntechOpen, CC BY 3.0)

The potential impact of a teratogen varies based on a range of factors including the specific teratogen, the length and amount of exposure, genetic susceptibility, and the quality of the prenatal environment. The longer the exposure or the higher the dose of a teratogen, the greater the likelihood of it doing harm. Some teratogens can cause a range of developmental issues, and in some cases, different teratogens contribute to s specific disorder. Embryos and fetuses can be harmed by teratogens to which their biological fathers were exposed, as well as by those to which they are exposed via the birth mother's body during gestation (Table 2.5).

The long-term effects of some teratogens often depend on the quality of the postnatal environment. For instance, maternal exposure to pollution is related to low birth weight, preterm birth, and neurological effects (Rani & Dhok, 2023). All these put a developing child at increased risk of challenges to overall health and quality of life.

Teratogen	Possible Consequences of Exposure
Environmental Toxin	
Radiation	Organ anomalies, slowed growth, or nervous system abnormalities depending on exposure timing
Lead	Increased risk for miscarriage, preterm birth, and low birth weight; damage to brain, kidneys, nervous system; learning or behavior problems
Mercury	Brain damage and hearing and vision problems
Polychlorinated biphenyls (PCBs)	Low birth weight and premature birth
Infectious Diseases	
Rubella (German measles)	Malformation of organs or miscarriage if exposed during first three months of pregnancy
HIV	Transmission of HIV from the biological mother to infant; antiviral treatment during prenatal period drastically reduces transmission to less than 5 percent
Cytomegalovirus (CSV)	Central nervous system damage and hearing loss
Genital herpes	Blindness or death if exposed to active herpes lesions in the birth canal
Toxoplasmosis and listeria	Miscarriage, preterm birth, and fetal death, depending on exposure timing
Zika virus	Microencephaly, hearing and vision loss, and intellectual disability
COVID-19	Preterm birth and neurodevelopmental disorders
Syphilis	Premature birth, low birth weight, and fetal death; congenital diseases
Influenza	Spina bifida, cleft palate, and defects in the neural tube
Medications	
Aspirin	Miscarriage if high doses are taken early in pregnancy; increased risk of bleeding if low doses are taken
Certain antibiotics (e.g., streptomycin)	Hearing loss and incomplete development of bones and teeth

TABLE 2.5 Long-Term Impacts of Various Teratogens (sources: CDC, 2024a; CDC, 2024b; Cestonaro et al., 2022; Dack et al., 2022; Giuliani et al., 2022; Honein et al., 2017; Kaleelullah & Garugula, 2021; Lin et al., 2023; Lusskin et al., 2018; Mactier & Hamilton, 2020; Manicklal, 2013; March of Dimes, 2021; Nesheim et al., 2012; Orsolini et al., 2017; Ross et al., 2015)

Teratogen	Possible Consequences of Exposure
Thalidomide	Very short or missing arms and legs and other congenital birth defects when taken during early pregnancy
Certain antiseizure medications	Developmental delays during infancy
Certain antipsychotic medications	Increased risk of heart defects
Certain antidepressant medications	Risk is not clear
Psychoactive Drugs	
Cocaine	Low birth weight and placental abruption/separation
Opioids and amphetamine	Preterm birth, reduced growth, heart issues, cognitive and behavioral issues
Nicotine	Low birth weight, premature birth, stillbirth
Alcohol	Damage to developing organs; fetal alcohol spectrum disorder
Heroin	Addiction requiring medical care to overcome withdrawal symptoms; damage to the visual system; long-term behavioral consequences
Cannabis	Decreased growth; deficits in attention and long-term executive function; increased impulsivity
Excessive caffeine	Deficiencies in short-term memory, attention, and impulse control; other neurobehavioral and neurological effects

TABLE 2.5 Long-Term Impacts of Various Teratogens (sources: CDC, 2024a; CDC, 2024b; Cestonaro et al., 2022; Dack et al., 2022; Giuliani et al., 2022; Honein et al., 2017; Kaleelullah & Garugula, 2021; Lin et al., 2023; Lusskin et al., 2018; Mactier & Hamilton, 2020; Manicklal, 2013; March of Dimes, 2021; Nesheim et al., 2012; Orsolini et al., 2017; Ross et al., 2015)

However, research shows that other factors associated with the home environment fostered resilience in preterm infants and had a positive influence on the children's academic performance in grade school (Wouldes, 2022). Parents or caregivers who actively engage with their infants, provide stimulating toys, and spend time teaching skills such as language and counting increase the chances that preterm and normal-weight infants will do well in school (Vanes et al., 2021; Wouldes, 2022). Interactions including singing to infants, telling them stories, and playing with them provide cognitive stimulation important to learning language and learning in general, regardless of culture (Lansford, 2021).

Extreme conditions such as harsh environments or war zones, in which people may face food shortages and tremendous stress, can have a negative impact on pregnancy. Severe emotional stress during pregnancy, including job stress, household stress (such as living paycheck-to-paycheck), or relational stress (such as being

a victim of domestic violence), leads to increased risk for miscarriage, premature birth, low birth weight, respiratory illnesses, and digestive problems (Zhang et al., 2023). Additionally, climate change may be a reason for increased exposure to stress for many people around the world, because it is believed to be increasing weather extremes such as flooding, wildfires, extreme heat, poor air quality, and restricted access to food and clean water (Ha, 2022; Olson & Metz, 2020). Working to lower stress and improve resilience factors, such as improving social support and prenatal care resources, can reduce vulnerability to these adverse effects and improve health outcomes for both the biological mother and the newborn (Zhang et al., 2023; Nolvi et al., 2022).

Males can also influence the health of the fetus if they have been exposed to certain toxins such as lead, radiation, or pesticides, or if they regularly use drugs or smoke. These factors can affect the quality and mobility of their sperm and therefore the health of the fetus during pregnancy (Meng & Groth, 2017). Secondhand smoke can lead to lower birth weights, particularly with the type of regular exposure that would occur from someone in the same house as the developing fetus (Khader et al., 2010). Likewise, intimate partner violence has adverse effects on the pregnant person including depression, anxiety, PTSD, and on the developing fetus (Agarwal et al., 2023).

Factors other than teratogens may put the health or even the life of the birth mother, the fetus, or both at risk. The most common causes of such high-risk pregnancies are maternal health problems like high blood pressure, diabetes, obesity, the presence of multiple fetuses (twins, triplets), and "advanced" maternal and paternal age (defined as over age thirty-five years).

Congenital Disorders

Genetics and the environment are factors that can contribute to a **congenital disorder**, or an abnormality present at birth. Common congenital disorders include heart defects, clubfoot, and cleft palate (CDC, 2024c). Approximately 3 percent of infants born within the United States have a congenital disorder, and disorders affecting the heart, lungs, or other vital organs account for nearly 20 percent of infant deaths (CDC, 2024c). Worldwide, congenital disorders affect approximately 3–6 percent of all pregnancies (World Birth Defects Day 2023: Global Efforts to Raise Awareness and Support Families | CDC, 2024d). The mortality rate due to congenital disorders worldwide was estimated to be about 7.6 percent in 2020 (Perin et al., 2023). The difference in rates between the United States and the rest of the world is likely due to differences in reporting data; infant mortality rates may be underestimated in many countries, especially those with lower incomes (Perin et al., 2023).

Monitoring Prenatal Development

Physicians use a variety of methods to monitor the development and health of the growing fetus. Not only do these allow us to observe the development of structures and organs, but some can detect the presence of chromosomal abnormalities:

- Ultrasounds use high-frequency sound waves to create an image of the embryo's or fetus's developing structures and organs and are a typical feature of prenatal care in the United States. Transvaginal ultrasounds have helped researchers and physicians learn more about the early stages of pregnancy than traditional abdominal ultrasound did.
- Maternal serum tests are blood tests typically given between the eleventh and thirteenth weeks of pregnancy to measures levels of certain proteins (Graves et al., 2002). Abnormal levels of these proteins suggest a higher chance of the fetus having a chromosomal abnormality.
- A test in which a needle is inserted through the mother's abdomen to take a sample of the amniotic fluid surrounding the fetus is **amniocentesis**; it is done around the sixteenth week of pregnancy. The sample is then tested for signs of chromosomal disorders (such as Down syndrome), some genetic disorders (like cystic fibrosis), and birth defects (such as spina bifida). Amniocentesis is typically only done when medically recommended.

- During the medical procedure **chorionic villus sampling** (CVS), a small piece of the placenta is removed to test for chromosomal and genetic abnormalities or defects. If necessary, it is performed in the first trimester. Like amniocentesis, CVS carries risks, including infection, limb deficiency, and/or miscarriage (Olney et al., 1995).

LINK TO LEARNING

Watch this short video about the amniocentesis procedure (https://openstax.org/r/104Amniocentisis) to learn more about its use in assessing a fetus for chromosomal and genetic abnormalities before birth.

Behaviors for a Healthy Pregnancy

A healthy pregnancy is never guaranteed, though certain prenatal behaviors and choices can improve the odds of having a healthy and safe experience. The person planning to carry the pregnancy should strive to maintain a healthy diet with sufficient levels of the macronutrients and micronutrients that support a healthy pregnancy. Macronutrients, including carbohydrates, proteins, and fats, provide the energy, protein, and fatty acids needed, while micronutrients provide the vitamins and minerals (Mousa et al., 2019). For example, folate is a B vitamin particularly important to fetal development and readily available in leafy green vegetables. Finally, the person carrying the pregnancy can make sure they get enough sleep, exercise regularly, stay up to date on their vaccinations, and mitigate any potential health issues such as diabetes, drinking, and smoking.

Finding a trusted obstetrician/gynecologist and/or midwife is also important, and prenatal care should begin as soon as the pregnancy is confirmed. Birth mothers who do not receive regular prenatal care are at higher risk of having a baby with low birth weight (Thorsen et al., 2019). Low birth weight is one major indicator that a newborn is at risk of a variety of postnatal complications. Regardless of culture, maintaining health while pregnant and getting regular prenatal care decrease the chances of having a baby with low birth weight (Khan et al., 2019; Zhou et al., 2019).

During prenatal visits, the obstetrician will check the vital signs of the pregnant person and the fetus to help assess the health of both; the pregnant person's weight is also noted to ensure appropriate weight gain during the pregnancy. This is generally 25 to 35 lb, depending on pre-pregnancy weight. The pregnant person will also be advised on diet during pregnancy, including which foods to avoid to limit potential exposure to toxins like *Listeria* (a bacterial parasite) and the number of extra calories needed to help support the pregnancy (about 300 calories more per day than before becoming pregnant) (American College of Obstetricians and Gynecologists, 2023). Getting enough exercise is also important. Someone who was very active before pregnancy can typically maintain that activity level; however, it's advisable to consult a health professional if starting a new exercise routine after becoming pregnant. Avoiding excessive stress matters too, as does preparing for the home arrival of the baby.

LINK TO LEARNING

Explore this online tool about beneficial food choices for those who are pregnant or breastfeeding (https://openstax.org/r/104PregEating) from the U.S. Department of Agriculture. This helps ensure proper nutrition at each stage of the pregnancy.

LINK TO LEARNING

Learn about some of the surprising ways pregnancy affects the body (https://openstax.org/r/104PregBodyEfct) in this TED Talk.

References

Agarwal, S., Prasad, R., Mantri, S., Chandrakar, R., Gupta, S., Babhulkar, V., Srivastav, S., Jaiswal, A., & Wanjari, M. B. (2023). A comprehensive review of intimate partner violence during pregnancy and its adverse effects on maternal and fetal health. *Cureus, 15*(5), Article e39262. https://doi.org/10.7759/cureus.39262

Alves, C., Jenkins, S. M., & Rapp, A. (2023). *Early pregnancy loss (spontaneous abortion)*. StatPearls Publishing. https://pubmed.ncbi.nlm.nih.gov/32809356/
American College of Obstetricians and Gynecologists. (2023, June). *Nutrition during pregnancy*. https://www.acog.org/womens-health/faqs/nutrition-during-pregnancy
Cestonaro, C., Menozzi, L., & Terranova, C. (2022). Infants of mothers with cocaine use: Review of clinical and medico-legal aspects. *Children*, *9*(1), Article 67. https://doi.org/10.3390/children9010067
Dack, K., Fell, M., Taylor, C. M., Havdahl, A., & Lewis, S. J. (2022). Prenatal mercury exposure and neurodevelopment up to the age of 5 years: A systematic review. *International Journal of Environmental Research and Public Health*, *19*(4), Article 1976. https://doi.org/10.3390/ijerph19041976
Declercq E., Wolterink A., Rowe R., de Jonge A., De Vries R., Nieuwenhuijze M., Verhoeven, C., & Shah, N. (2023). The natural pattern of birth timing and gestational age in the U.S. compared to England, and the Netherlands. *PLoS ONE 18*(1), Article e0278856. https://doi.org/10.1371/journal.pone.0278856
Graves, J. C., Miller, K. E., & Sellers, A. D. (2002). Maternal serum triple analyte screening in pregnancy. *American Family Physician*, *65*(5), 915–921. https://pubmed.ncbi.nlm.nih.gov/11898965/
Giuliani, F., Oros, D., Gunier, R. B., Deantoni, S., Rauch, S., Casale, R., Nieto, R., Bertino, E., Rego, A., Menis, C., Gravett, M. G., Candiani, M., Deruelle, P., García-May, P. K., Mhatre, M., Usman, M. A., Abd-Elsalam, S., Etuk, S., Napolitano, R., Liu, B., … Villar, J. (2022). Effects of prenatal exposure to maternal COVID-19 and perinatal care on neonatal outcome: results from the INTERCOVID multinational cohort study. *American Journal of Obstetrics and Gynecology, 227*(3), 488.e1–488.e17. https://doi.org/10.1016/j.ajog.2022.04.0197081
Ha, S. (2022). The changing climate and pregnancy health. *Current Environmental Health Reports*, (9), 263–275. https://doi.org/10.1007/s40572-022-00345-9
Hall, J. G. (2021). The mystery of monozygotic twinning I: What can amyoplasia tell us about monozygotic twinning and the possible role of twin–twin transfusion? *American Journal of Medical Genetics Part A, 185*(6), 1816–1821. https://doi.org/10.1002/ajmg.a.62172
Heil, J. R., & Bordoni, B. (2022). *Embryology, umbilical cord*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK557490/
Honein, M. A., Dawson, A. L., Petersen, E. E., Jones, A. M., Lee, E. H., Yazdy, M. M., Ahmad, N., Macdonald, J., Evert, N., Bingham, A., Ellington, S. R., Shapiro-Mendoza, C. K., Oduyebo, T., Fine, A. D., Brown, C. M., Sommer, J. N., Gupta, J., Cavicchia, P., Slavinski, S., White, J. L., Owen, M., … US Zika Pregnancy Registry Collaboration (2017). Birth defects among fetuses and infants of US women with evidence of possible zika virus infection during pregnancy. *JAMA, 317*(1), 59–68. https://doi.org/10.1001/jama.2016.19006
Hug, L., You, D., Blencowe, H., Mishra, A., Wang, Z., Fix, M. J., Wakefield, J., Moran, A. C., Gaigbe-Togbe, V., Suzuki, E., Blau, D. M., Cousens, S., Creanga, A., Croft, T., Hill, K., Joseph, K. S., Maswime, S., McClure, E. M., Pattinson, R., Pedersen, J., … UN Inter-agency Group for Child Mortality Estimation and its Core Stillbirth Estimation Group (2021). Global, regional, and national estimates and trends in stillbirths from 2000 to 2019: a systematic assessment. *The Lancet*, *398*(10302), 772–785. https://doi.org/10.1016/S0140-6736(21)01112-0
Jang, C., & Lee, H. (2022). A review of racial disparities in infant mortality in the US. *Children*, *9*(2), Article 257. https://doi.org/10.3390/children9020257
Jarvis, G. E. (2020). Misjudging early embryo mortality in natural human reproduction. *F1000Research, 9*, Article 702. https://doi.org/10.12688/f1000research.22655.1
Jobe, A. H. (2022). Three existential challenges in optimizing the lifelong health of infants born preterm. *The Journal of Pediatrics, 252*, 188–190. https://doi.org/10.1016/j.jpeds.2022.09.002
Kaleelullah, R. A., & Garugula, N. (2021). Teratogenic genesis in fetal malformations. *Cureus*, *13*(2), Article e13149. https://doi.org/10.7759/cureus.13149
Khader, Y. S., Al-Akour, N., Alzubi, I. M., & Lataifeh, I. (2010). The association between second hand smoke and low birth weight and preterm delivery. *Maternal and Child Health Journal*, *15*, 453–459. https://doi.org/10.1007/s10995-010-0599-2
Khan, N., Mozumdar, A., & Kaur, S. (2019). Determinants of low birth weight in India: An investigation from the National Family Health Survey. *American Journal of Human Biology*, *32*(3), Article e23355. https://doi.org/10.1002/ajhb.23355
Laisk, T., Soares, A. L. G., Ferreira, T., Painter, J. N., Censin, J. C., Laber, S., Bacelis, J., Chen, C.-Y., Lepamets, M., Lin, K., Liu, S., Millwood, I. Y., Ramu, A., Southcombe, J., Andersen, M. S., Yang, L., Becker, C. M., Børglum, A. D., Gordon, S. D., Bybjerg-Grauholm, J., Helgeland, Ø., … Lindgren, C. M. (2020). The genetic architecture of sporadic and multiple consecutive miscarriage. *Nature Communications*, *11*, Article 5980. https://doi.org/10.1038/s41467-020-19742-5
Lansford, J. E. (2021). Annual research review: Cross-cultural similarities and differences in parenting. *Journal of Child Psychology and Psychiatry*, *63*(4), 466–479. https://doi.org/10.1111/jcpp.13539
Lin, A., Dent, G. L., Davies, S., Dominguez, Z. M., Cioffredi, L. A., McLemore, G. L., & Maxwell, J. R. (2023). Prenatal cannabinoid exposure: Why expecting individuals should take a pregnancy pause from using cannabinoid products. *Frontiers in Pediatrics*, *11*, Article 1278227. https://doi.org/10.3389/fped.2023.1278227
Mactier, H., & Hamilton, R. (2020). Prenatal opioid exposure – increasing evidence of harm. *Early Human Development*, Article 105188. https://doi.org/10.1016/j.earlhumdev.2020.105188
Manicklal, S., Emery, V. C., Lazzarotto, T., Boppana, S. B., & Gupta, R. K. (2013). The "silent" global burden of congenital cytomegalovirus. *Clinical Microbiology Reviews, 26*(1), 86–102. https://doi.org/10.1128/CMR.00062-12
March of Dimes. (2021, August). *Toxoplasmosis*. https://www.marchofdimes.org/find-support/topics/pregnancy/toxoplasmosis
Meng, Y., & Groth, S. W. (2017). Fathers count: The impact of paternal risk factors on birth outcomes. *Maternal and Child Health Journal*, *22*, 401–408. https://doi.org/10.1007/s10995-017-2407-8
Michels T. C., & Tiu A. Y. (2007). Second trimester pregnancy loss. *American Family Physician*, *76*(9), 1341–1346. https://www.aafp.org/pubs/afp/issues/2007/1101/p1341.pdf
Mousa, A., Naqash, A., & Lim, S. (2019). Macronutrient and micronutrient intake during pregnancy: An overview of recent evidence. *Nutrients*, *11*(2), Article 443. https://doi.org/10.3390/nu11020443
Nesheim, S., Taylor, A., Lampe, M. A., Kilmarx, P. H., Fitz Harris, L., Whitmore, S., Griffith, J., Thomas-Proctor, M., Fenton, K., & Mermin, J. (2012). A framework for elimination of perinatal transmission of HIV in the United States. *Pediatrics, 130*(4), 738–744. https://doi.org/10.1542/peds.2012-0194
Nolvi, S., Merz, E. C., Kataja, E. L., & Parsons, C. E. (2022). Prenatal stress and the developing brain: Postnatal environments promoting resilience. *Biological Psychiatry*, *93*(10), 942 952. https://doi.org/10.1016/j.biopsych.2022.11.023
Oliveira, M. T. S., Oliveira, C. N. T., Marques, L. M., Souza, C. L., & Oliveira, M. V. (2020). Factors associated with spontaneous abortion: A systematic review. *Revista Brasileira de Saúde Materno Infantil*, *20*(2), 361–372. https://doi.org/10.1590/1806-93042020000200003
Olney, R. S., Moore, C, A,, Khoury M. J., Erickson, J. D., Edmonds, L. D., Botto, L. D., Division of Birth Defects and Developmental Disabilities, National Center for Environmental Health, Atrash, H. K., Division of Reproductive Health, & National Center for Chronic Disease Prevention and Health Promotion. (1995, July 21). *Chorionic villus sampling and amniocentesis: Recommendations for prenatal counseling*. U.S. Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. https://www.cdc.gov/mmwr/preview/mmwrhtml/00038393.htm
Olson, D. M., & Metz, G. A. S. (2020). Climate change is a major stressor causing poor pregnancy outcomes and child development. *F1000Research*, *9*, Article 1222. https://doi.org/10.12688/f1000research.27157.1
Orsolini, L., Papanti, D., Corkery, J., De Luca, M. A., Cadoni, C., Di Chiara, G., & Schifano, F. (2017). Is there a teratogenicity risk associated with cannabis and synthetic cannabimimetics' ('spice') intake? *CNS & Neurological Disorders Drug Targets*, *16*(5), 585–591. https://doi.org/10.2174/1871527316666170413101257
Perin, J., Mai, C. T., De Costa, A., Strong, K., Diaz, T., Blencowe, H., Berry, R. J., Williams, J. L., & Liu, L. (2023). Systematic estimates of the global, regional and national under-5 mortality burden attributable to birth defects in 2000–2019: A summary of findings from the 2020 WHO estimates. *BMJ Open*, *13*(1), Article e067033. https://doi.org/10.1136/bmjopen-2022-067033
Rani, P., & Dhok, A. (2023). Effects of pollution on pregnancy and infants. *Cureus*, *15*(1), Article e33906. https://doi.org/10.7759/cureus.33906
Roberts, A.-D., Schmidt, R., & Shah, M. (2018). Split happens: A case of consecutive monozygotic twin pregnancies following elective single-embryo transfer in a 40-year old woman using donor oocytes. *Journal of Assisted Reproduction and Genetics*, *35*, 1529–1532. https://doi.org/10.1007/s10815-018-1218-1
Ross, E. J., Graham, D. L., Money, K. M., & Stanwood, G. D. (2015). Developmental consequences of fetal exposure to drugs: What we know and what we still must learn. *Neuropsychopharmacology, 40*(1), 61–87. https://doi.org/10.1038/npp.2014.147
Thomas, S., & Asztalos, E. (2021). Gestation-based viability–difficult decisions with far-reaching consequences. *Children*, *8*(7), Article 593. https://doi.org/10.3390/children8070593
Thorsen, M. L., Thorsen, A., & McGarvey, R. (2019). Operational efficiency, patient composition and regional context of U.S. health centers: Associations with access to early prenatal care and low birth weight. *Social Science & Medicine*, *226*, 143–152. https://doi.org/10.1016/j.socscimed.2019.02.043
U.S. Centers for Disease Control and Prevention. (2024a, April 2). *Childhood lead poisoning prevention*. U.S. Department of Health and Human Services. https://www.cdc.gov/lead-prevention/risk-factors/pregnancy.html
U.S. Centers for Disease Control and Prevention. (2024b, April 24). *Radiation emergencies*. U.S. Department of Health and Human Services. https://www.cdc.gov/radiation-emergencies/hcp/clinical-guidance/pregnancy.html
U.S. Centers for Disease Control and Prevention. (2024c, May 16). *Diagnosis of birth defects*. U.S. Department of Health and Human Services. https://www.cdc.gov/birth-defects/screening/diagnosis.html
U.S. Centers for Disease Control and Prevention. *Birth defects*. (2024d, May 26). U.S. Department of Health and Human Services. https://www.cdc.gov/birth-defects/
Vanes, L. D., Hadaya, L., Kanel, D., Falconer, S., Ball, G., Batalle, D., Counsell, S. J., David Edwards, A., & Nosarti, C. (2021). Associations between neonatal brain structure, the home environment, and childhood outcomes following very preterm birth. *Biological Psychiatry Global Open Science, 1*(2), 146–155. https://doi.org/10.1016/j.bpsgos.2021.05.002
Verhave, B. L., Nassereddin, A., & Lappin, S. L. (2022). *Embryology, lanugo*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK526092/
Wouldes, T. A. (2022). Fostering resilience to very preterm birth through the caregiving environment. *JAMA Network Open*, *5*(10), Article e2238095. https://doi.org/10.1001/jamanetworkopen.2022.38095

Zhang, L., Zhu, S., Wu, Y., Chen, D., & Liang, Z. (2023). Association between maternal second-trimester stress and adverse pregnancy outcomes according to pre-pregnancy body mass index and gestational weight gain. *Frontiers in Psychiatry, 14*, Article 1129014. https://doi.org/10.3389/fpsyt.2023.1129014
Zhou, H., Wang, A., Huang, X., Guo, S., Yang, Y., Martin, K., Tian, X., Josephs-Spaulding, J., Ma, C., Scherpbier, R. W., & Wang, Y. (2019). Quality antenatal care protects against low birth weight in 42 poor counties of Western China. *PLoS ONE, 14*(1), Article e0210393. https://doi.org/10.1371/journal.pone.0210393

2.4 Childbirth and Perinatal Health

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the stages of labor and birth
- Compare the birthing options available to parents
- Explain the methods for assessing the health of the birth mother and the newborn

Emily and Omar are expecting a baby in a few short months. As their due date approaches, they discuss options for the birth. Emily has always been drawn to the idea of a quiet birth at home, accompanied by a midwife. Omar, on the other hand, expresses anxiety about this option and would feel safer with a hospital birth. After all, what if something goes wrong? Wouldn't Emily want a doctor in such a situation? The couple weighs the pros and cons of each option and arrives at a compromise. Emily will plan to give birth at home with the support of a midwife but will switch to the hospital if any complications arise. Luckily, when the time comes, Emily's labor is uncomplicated, and the couple marvel at the beauty of their newborn in the comfort of their home. They are grateful for the compromise they reached. The birth was a journey that blended the intimacy of home with the safety net of the hospital, creating a unique and special experience for them.

Pregnancy can be an exciting experience, although the actual birth may not be the first thing on parents' minds when they discover that they're expecting. Like Emily and Omar, parents need to consider where the birth might take place and who may be present (Figure 2.18). Medications to ease labor pain are available, but natural childbirth (without the use of medication) is also an option. Doctors, midwives, and doulas can all be present at a birth, along with partners and supportive friends or family members. A baby's arrival can also be a more private experience. Regardless, childbirth can cause anxiety or fear. Understanding the birthing process, the signs that labor has started, and where and how birth can occur can help expectant parents prepare.

(a) (b)

FIGURE 2.18 Birth experiences vary, and labor often looks very different from the way it is depicted on TV. Some options for managing the pain and process of childbirth include (a) using a birthing pool particularly in early stages, and (b) using certain positions and pressure techniques throughout various stages of labor. (credit a: modification of work "birth2" by Lindsey Turner/Flickr, CC BY 2.0; credit b: modification of work "Doula" by Agência Senado/Flickr, CC BY 2.0)

The Birth Process

The process of giving birth starts approximately two weeks before the big event with changes in birth hormone levels, including oxytocin. The most common observable first sign of labor is contractions. Contractions may be true contractions or may include Braxton-Hicks contractions, also called "false labor" (Raines & Cooper, 2023). Braxton-Hicks contractions are typically not painful and may help prepare the body for the process of

labor.

Though it occurs before labor in only a minority of cases, another sign that birth is approaching is the rupture of the amniotic sac membranes (often called "water breaking") (American College of Obstetricians and Gynecologists, 2020). The mucus plug, which serves as a barrier between the developing fetus and the vagina and prevents bacteria and other contaminants from entering the uterus, may also be dislodged. Once the cervix starts to dilate, the mucus plug may be released, and amniotic fluid begins to leak out.

Though the exact mechanisms underlying the timing of birth are still not completely understood, the process includes hormone-mediated physiological changes that ready both the pregnant person and the fetus for the event (Hutchinson et al., 2023). One such hormone is **oxytocin** (Walter et al., 2021), which plays a role in many behaviors including initiating labor and forming bonds with others. In fact, when labor is medically induced (started early), birth mothers are often given a synthetic form of oxytocin, called Pitocin, which helps start the contractions that allow the fetus to be born. Birth mothers may also have an amniotomy, in which their water is broken manually to speed labor and reduce the likelihood of surgical intervention (De Vivo et al., 2019).

Labor may be induced for several reasons, including to avoid an overdue pregnancy. After forty weeks, the fetus and birth mother both face potential complications, including more difficult and longer labor, injury during the birth process, and low blood sugar in the newborn (Šimják et al., 2022). Labor may also be induced if medical issues like problems with the placenta, such as placental separation, arise that don't require an emergency cesarean delivery.

Regardless of whether labor begins on its own or is induced, the process of giving birth has three stages: dilation, active labor, and afterbirth delivery.

Stage 1: Dilation

The first stage of labor is marked by two different types of contractions, both of which allow dilation (opening) and effacement (thinning) of the cervix to occur (Figure 2.19). Early contractions are irregular and infrequent and occur before the cervix dilates to 6 cm. Active contractions are more frequent and powerful and last longer. The cervix dilates to approximately 10 cm during labor to allow the fetus to pass through the birth canal. Hormones including estrogen, progesterone, relaxin, and prostaglandins are released to soften the cervix so that it can dilate and efface (Walter et al., 2021).

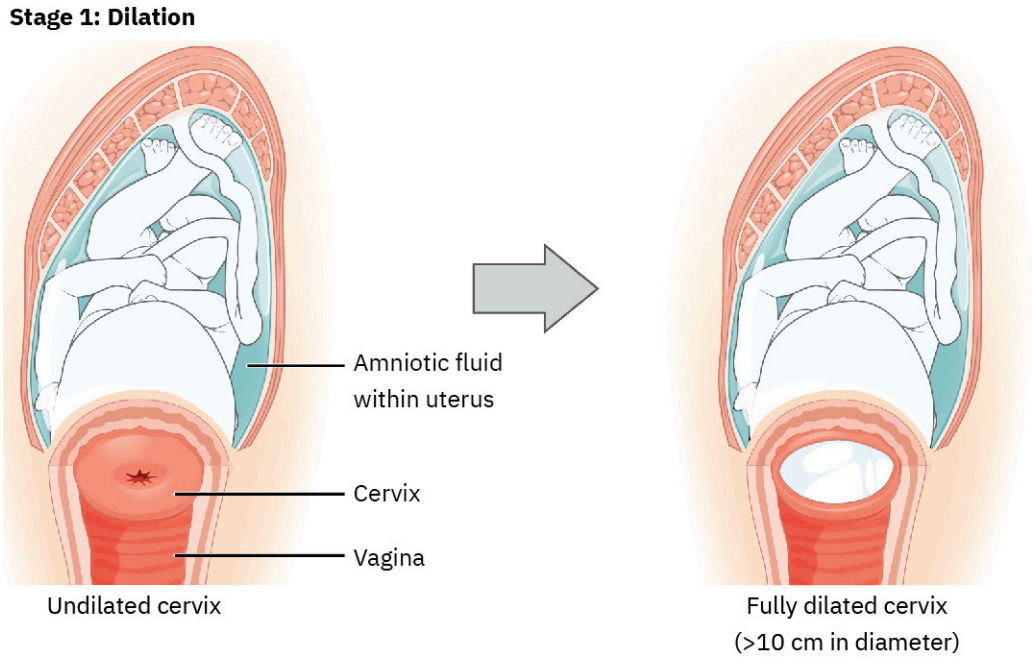


FIGURE 2.19 The stages of childbirth begin with stage 1, cervical dilation. (attribution: Copyright Rice University,

OpenStax, under CC BY NC-SA 4.0 license)

The amniotic sac usually ruptures during the first stage, often due to the fetus's head placing extra pressure on it. If active labor (the second stage) doesn't start naturally within the next twenty-four hours, the birth mother may require a cesarean delivery (through a surgical incision in the abdomen) because the fetus no longer has enough amniotic fluid surrounding it to survive (Obrowski et al., 2016).

Though the duration of each stage of labor varies, the first is typically the longest. On average, it takes several hours, and it can be as long as twenty hours before the second stage starts (Hutchinson et al., 2023). The first stage may be shorter for subsequent births.

Stage 2: Active Labor

The second stage of labor, called active labor, doesn't start until the cervix is fully effaced (100 percent) and dilated to 10 cm (Figure 2.20). In this stage, the birth mother will be asked to push downward through the peak of the contractions to help the baby move through the birth canal quickly and assist with delivery. Contractions may last up to a minute each and occur less than five minutes apart (Raines & Cooper, 2023).

Cervical Dilation During Labor

2 cm	4 cm	6 cm	8 cm	10 cm
Grape	Kumquat	Plum	Apple	Pomegranate

FIGURE 2.20 The cervix dilates from completely closed to 10 cm over the course of labor. (credit "Grape": modification of work "Solaris grapes in Chateaux Luna vineyard 24" by "W.carter"/Wikimedia Commons, CC0 1.0; credit "Kumquat": modification of work "Meiwa ripe fruit at Pali o Waipio Huelo, Maui, Hawaii" by Forest and Kim Starr/Flickr, CC BY 2.0; credit "Plum": modification of work "Bluebyrd plum" by Keith Weller, U.S. Department of Agriculture/Wikimedia Commons, Public Domain; credit "Apple": modification of work "Nittany fruit at Hawea Pl Olinda, Maui, Hawaii" by Forest and Kim Starr/Flickr, CC BY 2.0; credit "Pomegranate": modification of work "Punica granatum (Pomegranate)" by "Bj.schoenmakers"/Wikimedia Commons, CC0 1.0)

Crowning occurs when the top of the baby's head appears and is about to come out. Occasionally an incision called an episiotomy will be made to increase the size of the vaginal opening and help the baby's head and shoulders emerge, though many medical professionals avoid this practice (Jiang et al., 2017). Both episiotomy and tearing often require stiches to repair the vaginal opening after birth. If necessary, doctors may use forceps or vacuum suction to help hasten the delivery of the baby.

Typically, the head of the fetus passes through the vaginal opening first, followed by the shoulders and then the rest of the newborn (Figure 2.21). A fetus that has not moved to a headfirst position in the uterus by thirty-six weeks is at risk for a breech birth (Cluver et al., 2015), in which the feet or buttocks appear first. Because this position increases the chance of complications during the birth process, a cesarean delivery may be needed if doctors cannot get the baby into proper birth position using drugs or other maneuvers (Cluver et al., 2015).

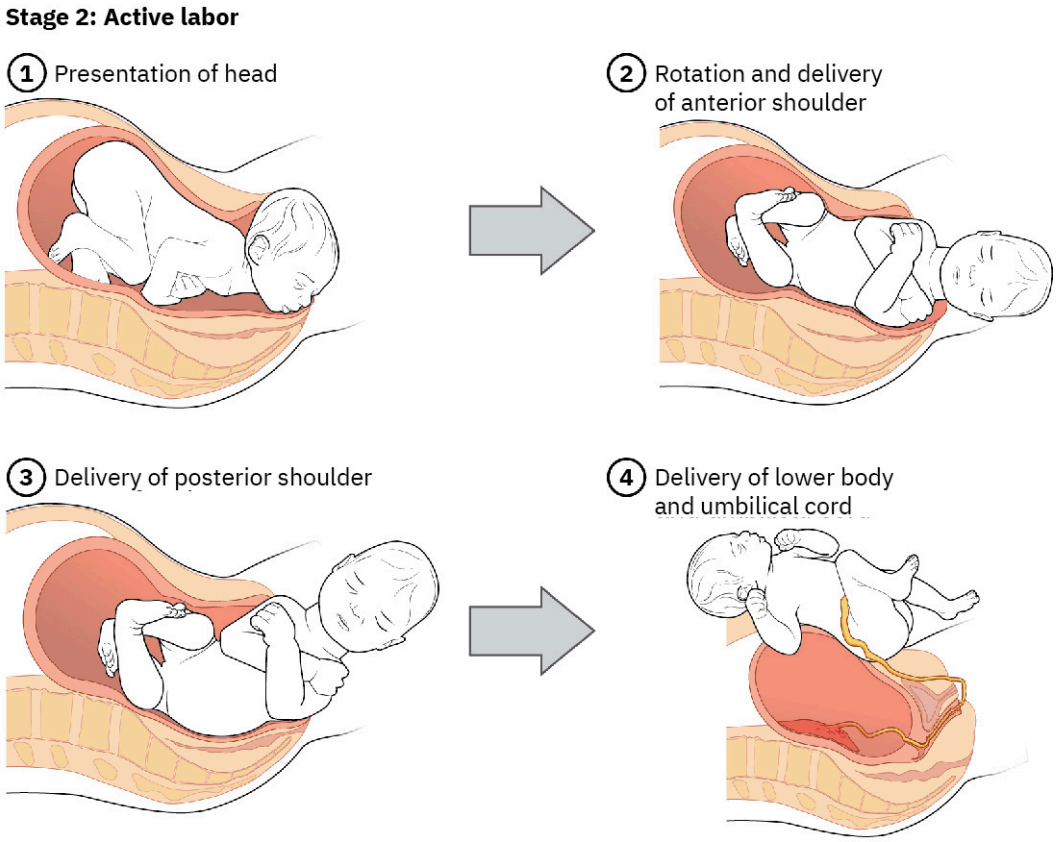


FIGURE 2.21 Stage 2 of the labor process includes full dilation and expulsion of the newborn. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Stage 3: Afterbirth Delivery

Once the fetus has been born, the placenta, the fetus's source of nutrients and oxygen, is no longer needed. During the last stage of labor, therefore, the placenta is expelled (Figure 2.22). This process may last between five and thirty minutes and requires a few final contractions that separate the placenta from the uterus and help eject it (Hutchinson et al., 2023). If the placenta is not fully expelled, medical intervention may be necessary to remove the placenta, because its retention can cause serious complications, including infection and excessive blood loss.

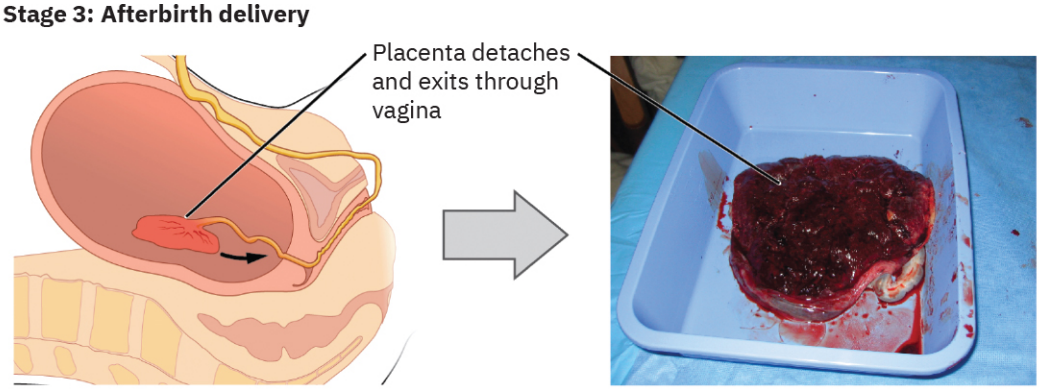


FIGURE 2.22 Stage 3 of labor involves the expulsion of the placenta. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license; credit right: modification of work "Human placenta uterine side" by "Ravedave"/Wikimedia Commons, Public Domain)

In many Western countries, hospital staff dispose of the placenta after it has been expelled. However, in some cultures, it has significant cultural value, and it may be buried, consumed, or turned into memorabilia (Moeti et al., 2023).[1]

LINK TO LEARNING

Watch this video about the stages of labor (https://openstax.org/r/104StagesLabor) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Childbirth Options

The end goal of labor is to successfully deliver a healthy infant. But there are innumerable combinations of circumstances and ways in which that can happen. Decisions about how to give birth, where to give birth, whether it can be scheduled, how much medical intervention will be available or is desired, and how best to deal with the discomfort associated with childbirth have led to a wide variety of options.

INTERSECTIONS AND CONTEXTS

Birthing Positions around the World

Various birthing positions are popular around the world, including standing upright, sitting, kneeling on all fours, lying on the side, and the most widely known, lying on the back (called the supine position). Giving birth while squatting, kneeling, or standing is believed to reduce pain and increase the ease of delivery, because these positions rely on gravity to help the fetus complete the journey through the birth canal (Berta et al., 2019; Peters et al. 2021; Satone, 2023). Before the seventeenth century, giving birth in an upright position was the most common method in Western countries (Satone, 2023).[2]

Today, the supine position is most frequently used in the United States, and it is also growing more prevalent in countries where medicine is becoming Westernized and births are taking place primarily in hospitals. However, this position may extend the pain associated with giving birth and increase complications (Satone, 2023).[3] Most recently, midwives and other professionals in the United States and other countries have started educating pregnant people and medical staff about the advantages of alternate childbirth positions.

Alternatives to the supine position tend to be more common in countries like Uganda, Ethiopia, Kenya, Tanzania, Nepal, and Peru, where more births occur in the home (Beinempaka et al., 2015; Peters et al., 2021; Regassa et al., 2022). In Nepal, mothers often give birth on their hands and knees (Peters et al., 2021). Though it's difficult to stand or squat during a prolonged labor, a labor chair can offer support when in the squatting position.

In parts of Tanzania, the traditional birthing position was upright, though most birth mothers (80 percent) now give birth in the supine position due to the influence of Western medicine (Mselle & Eustace, 2020).[4] This is also true in parts of Peru. However, the Peruvian government has begun funding birthing centers where traditional upright positions are used, to decrease the nation's high maternal mortality rates (Palomino, 2008).

Lack of information about the variability of birthing positions may also be a factor. A study from Nigeria, where more than 90 percent of birth mothers at birthing centers give birth in the supine position, found that 69 percent believed this was the only birthing position (Okonta, 2012). Unawareness of the options may inhibit birth mothers from making informed choices about their labor experience (Okonta, 2012). The WHO updated its birthing practice recommendations in 2018 to ensure that birthing mothers know their options and understand research data showing that upright birthing positions may ease delivery and reduce the risk of postdelivery hemorrhage (WHO, 2018).

1 This study (Moeti et al., 2023) uses the terms "Western" and "indigenous."
2 This study (Satone, 2023) uses the term "Western."
3 This study (Satone, 2023) uses the term "Western."
4 This study (Mselle & Eustace, 2020) uses the term "Western."

Vaginal versus Cesarean Delivery

Vaginal deliveries are generally considered to be the safest for the birth mother and for infants born near or at full term (Desai & Tsukerman, 2023; Gregory et al., 2011). In this process, the fetus passes through the birth canal and pelvis during delivery. This type of delivery can occur in multiple settings, including in a hospital, a birthing center, or at home, and depending on the location, in water. Vaginal delivery, when possible, typically allows faster recovery for the mother and improved immune functioning for the newborn (Desai & Tsukermann, 2023).

In some circumstances, however, a vaginal delivery isn't the best or safest option. For example, if a sexually transmitted infection may be passed to the newborn through the birth canal, the fetus is too large or is in a breech position, the umbilical cord is tangled around the fetus, or the mother has placenta previa (which causes excessive bleeding during birth) or certain other medical conditions, a vaginal birth may not be advisable. In a **cesarean birth**, or C-section, an incision is made in both the abdomen and the uterus, and the newborn and placenta are delivered through the resulting opening. Complications for the birth mother such as bleeding, blood clots, and infections can arise due to the invasive nature of the procedure. Cesareans also require longer hospital stays and longer recovery times. Having a cesarean also increases the chances of needing one again for subsequent pregnancies, but many birth mothers are able to give birth vaginally after a cesarean delivery, commonly referred to as "vaginal birth after cesarian section" (VBAC).

Pain Management Techniques

Regardless of how birth happens, many options are available for dealing with the pain of labor. In the 1960s, the epidural, an injection of anesthetics into a space in the mother's spinal cord to block the sensation of pain, became common. However, nitrous oxide, widely used in the early 1900s, has been making a comeback (Nanji & Carvalho, 2020). Depending on the drugs used and their concentrations, however, pain medication may weaken uterine contractions and prolong labor (Halliday et al., 2022).

In contrast, **natural childbirth** uses nonpharmaceutical techniques to help minimize both pain for the birth mother and the need for medical intervention (Table 2.6). While only some of these techniques are evidence-based practices for pain management, they all can support pain management in combination with stretching and specific childbirth positions.

Childbirth Technique	Description
Lamaze	Classes teach individuals what to expect and introduce specific breathing techniques and behaviors to support the birth mother during the birthing process.
Bradley	Classes promote nutrition and exercise to help reduce pain and complications during delivery. The method also teaches breathing and relaxation techniques and includes partners as labor coaches.
Water birth	Birth or part of labor occurs in clean warm water, which may soothe both birth mother and newborn and relieve pain. Being delivered into a warm, wet environment may also be less of a shock for the newborn, who is leaving the warm, wet environment of the uterus.
Acupuncture	Needles are inserted into specific areas of the body to reduce pain and relieve stress. This method can be used during early labor to help decrease discomfort and may reduce pain during labor as well as the need for medications.

TABLE 2.6 Natural Childbirth Options (sources: Gallo et al., 2018; Hao & Mittelman, 2014; Madden et al., 2016; Santana et al., 2022; Sharifipour et al., 2022; Smith et al., 2020; Vanderlaan et al., 2018; Varner, 2015, Wax et al., 2010)

Childbirth Technique	Description
Massage	Massage techniques, warm showers, and the use of delivery balls have all been shown to reduce pain.
Hypnosis	A practitioner lulls the birth mother into a state where they are more open to suggestions and then suggests relaxation and pain management strategies for pain management. Hypnosis has yet to be shown to definitively improve the childbirth experience.

TABLE 2.6 Natural Childbirth Options (sources: Gallo et al., 2018; Hao & Mittelman, 2014; Madden et al., 2016; Santana et al., 2022; Sharifipour et al., 2022; Smith et al., 2020; Vanderlaan et al., 2018; Varner, 2015, Wax et al., 2010)

LINK TO LEARNING

Use this helpful online birth plan tool (https://openstax.org/r/104BirthPlan) created by the American College of Obstetricians and Gynecologists to learn more about all the decisions a person might make in a birth plan.

Professional Assistance

Many people choose to give birth under the care of an obstetrician/gynecologist (OB/GYN). In addition, several types of midwives can support the birthing process. Their duties vary from culture to culture, but generally, midwives provide help and care over the prenatal period as well as assist parents during the birth of their child. Some spend substantial time with birth mothers both before and after delivery and may even help with housework and visitors, depending on cultural norms. Most midwives in the United States have some level of medical or nursing training and credentials (Table 2.7).

Midwife Type	Description
Certified Nurse-Midwife (CNM)	A registered nurse who has received extra training (a graduate degree) and credentialing to become a midwife
Certified Midwife/ Direct-entry midwife (CM)	A midwife who has earned graduate degrees that include some medical training, allowing them to provide pre- and postnatal care, along with birthing a child
Certified Professional Midwife (CPM)	A midwife who has mastered an apprenticeship or educational program granting credentials ranging from a certificate to a graduate degree

TABLE 2.7 Types of Midwives in the United States (source: Backes & Scrimshaw, 2020)

Other credentialed individuals who may assist a pregnancy are known as doulas. In the United States, doulas may take certification courses to become licensed, but they do not receive the same type of training as a midwife (Backes & Scrimshaw, 2020). Most of their training focuses on ways to support and assist birth mothers during pregnancy and after giving birth. Doulas may also support breastfeeding success and provide emotional support, by being a source of support through home visits and advocacy for pregnant women (Sobczak et al., 2023). They can also be helpful in bridging cultural and language barriers for those giving birth outside their country of birth (Kathawa et al., 2021).

Birth Locations

Many factors come in to play in the decision of where to give birth, including health insurance coverage, economic resources, the availability of nearby options, and existing health conditions or other considerations that may require special care. The question for the birth mother or future parents is, what is most important to them about the birth process.

About 98 percent of births in the United States occur in a hospital (Backes & Scrimshaw, 2020). In some parts of Europe and elsewhere around the world, birth more frequently occurs in a birthing center (Peters et al., 2021). One of the advantages of delivering in a hospital or birthing center is the ability to have vital signs like the heart rate and blood pressure continuously monitored. Changes in these can indicate distress or potential complications during the labor process, and medical interventions can be started quickly to ensure a safe delivery. More powerful medications are also available to assist with any discomfort during labor. Another benefit of institutional delivery is the series of automatic health screenings performed on newborns in hospitals and other medical settings.

Last, if something goes wrong during the birth, hospitals and birthing centers are typically well-equipped to provide immediate medical interventions, and many have specialized neonatal units that undertake the care of infants born prematurely or with complications. However, the quality of care available during labor is not uniform across the globe. In some countries, such as Finland, medical centers are equipped to handle many common complications while also providing extensive support for new mothers (Wrede et al., 2021). In contrast, though health care is free in birthing centers in Malawi, these centers are often short-staffed or not available in rural areas (Wrede et al., 2021). Though most deliveries are free of complications, issues that necessitate medical intervention include fetal distress, a tangled umbilical cord or problem in the uterus, and excessive maternal bleeding (Table 2.8).

Location	Overview
Hospital	Hospitals provide a medical and clinical focus, monitoring of baby and mother's vital signs, and medical intervention ready for high-risk births or complications. Hospital birth is common in the United States.
Birthing center	Centers provide overall "wellness of mother" focus; monitoring of baby and mother's vital signs; and sometimes birthing rooms with tubs for water-based births, beds, and other means to make families comfortable during the process. Birthing centers are becoming more frequent in India and Indonesia.
Home	Home offers a familiar environment that might include a room set up for birthing where a midwife or doula may assist. Giving birth at home is common in the Netherlands.

TABLE 2.8 Birthing Locations (sources: Galková et al., 2022; Pomeroy et al., 2014)

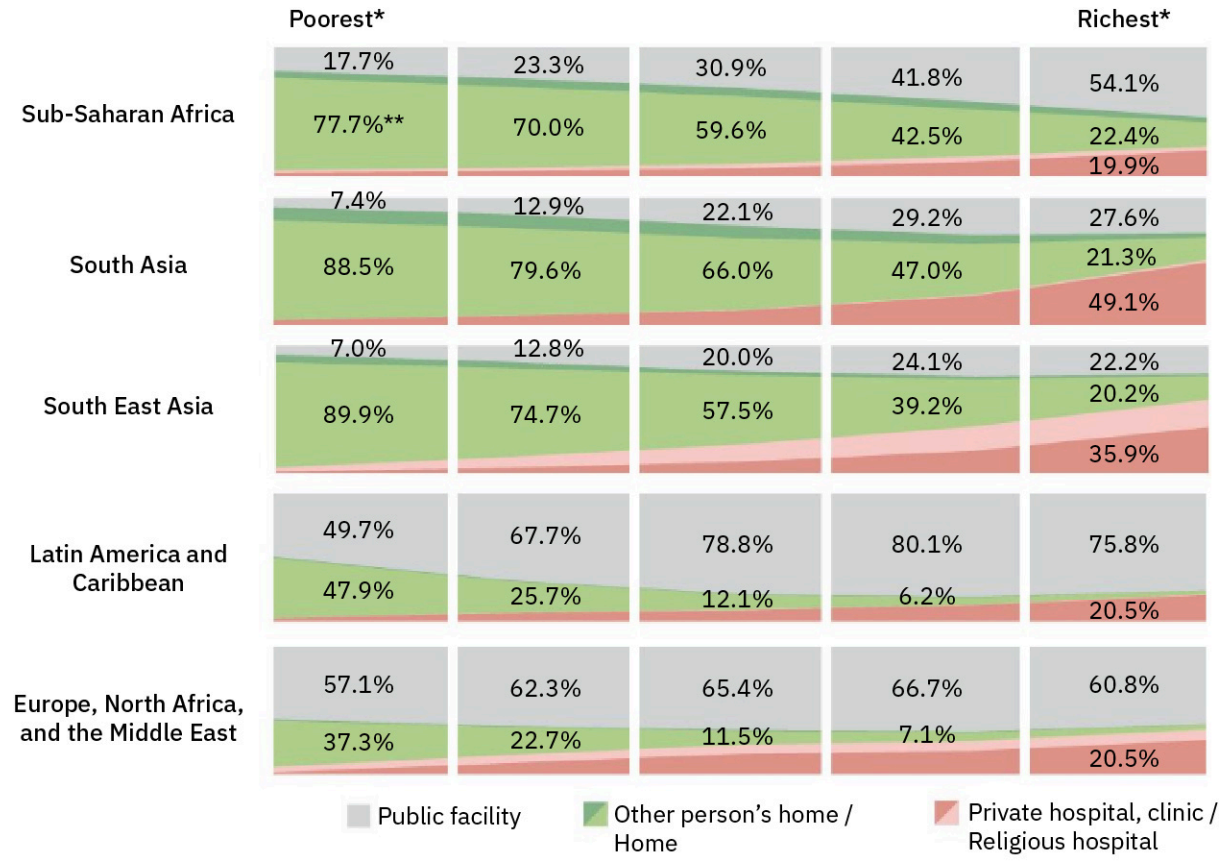
LINK TO LEARNING

Watch this TED talk about a Simple Birth Kit for Mothers in the Developing World (https://openstax.org/r/104BirthKit) that could decrease maternal mortality.

For some with low-risk pregnancies, giving birth at home is an option. This method allows the birth to occur in a familiar place, and choices regarding the circumstances surrounding the event, such as whether music is playing, to be made in ways that can't always be achieved at a hospital or birthing center. Home births are also associated with a reduction in unnecessary medical interventions (Committee on Obstetric Practice, 2017), but only about 1 percent of U.S. births occur at home (Backes & Scrimshaw, 2020). Ensuring the safety of both mother and newborn requires substantial advance planning. Birthing at home typically relies on the help of

midwives or doulas (or both), but a doctor or medical practitioner should be available if there are complications. Transportation to a medical facility should also be standing by.

Globally, nearly half of all births occur at home. Income seems to be an influential factor, however (Figure 2.23). In most countries, even those whose populations have the lowest socioeconomic status, women with higher incomes gave birth in a hospital or birthing center (Montagu et al., 2011). In many parts of Africa, and parts of Asia such as Nepal, birth often occurs at home and the mother may be assisted by a midwife, though midwives' training may be more culturally based rather than medically based as it is in the United States and Europe (Peters et al., 2021).



* 'Poorest and Richest' refer to an aggregate of country-weighted wealth quintiles for each region and are only approximations of true regional wealth quintiles.

Source: Montagu, D., et al. (2011). Where do poor women in developing countries give birth? A multi-country analysis of demographic and health survey data. *PLOS ONE 6*(2): e17155.

FIGURE 2.23 Birth locations around the world vary between public facilities like hospitals and birthing centers, homes, and private hospitals or birthing centers. (credit: modification of work "Figure 1. Place of birth by region" by Montagu et al./PLOS One, CC BY)

Perinatal Health and Screening

Perinatal health refers to the health of both the pregnant person and fetus from the twenty-fourth week of gestation to about two to four weeks after birth of the infant. Pregnant individuals at risk of complications or of advanced maternal age may be offered more frequent ultrasounds after the twenty-eighth week of gestation. This noninvasive test helps the OB/GYN or others to assess the size of the fetus, whether it is in breech position or has turned, and whether it is growing at a typical pace. The fetal heart rate will also be measured to ensure the vital signs are healthy.

Other important aspects of perinatal health and screening involve newborn tests and care for low-birth-weight

babies. After giving birth, people remain important and valuable outside of any role related to the pregnancy and the infant. It is essential to care for their emotional and physical wellbeing in the weeks and months following the arrival of the child.

Caring for People After Giving Birth

Much of the focus after birth is on the newborn and its care. However, birth mothers are still recovering and need postpartum care as well. In the United States, they will often have a follow-up appointment to assess their physical recovery, but they also need help coping with the stress of caring for a newborn while healing. In Ghana, birth mothers often did not realize that they, too, needed care during the postpartum period (Yenupini et al., 2023). The lack of such care is thought to contribute to high mortality rates for birth mothers (Yenupini et al., 2023).

According to the American College of Obstetricians and Gynecologists (2018), postpartum care should be viewed not as a single-visit issue but as a long-term process with consequences for the future health of both birth mother and infant. The focus should also be on social and emotional health, not just physical health, and should assess the mother's emotional well-being, sleep, and any issues related to feeding and caring for the newborn (American College of Obstetricians and Gynecologists, 2018). Postpartum care is beneficial in reducing a variety of emotional and physical health risks in both birth mothers and adoptive parents (Lopez-Gonzalez & Kopparapu, 2022; Mott et al., 2011).

Newborn Tests

In many Western countries, newborns delivered in a medical facility will be screened for various diseases and conditions, including genetic and metabolic disorders, usually within the first two days of life. For example, blood tests and hearing tests are often common screenings, as well as screening for congenital heart issues. The first test administered to a newborn is the Apgar test.

The **Apgar test** is typically given one minute after birth and then again at five minutes after birth. This test assesses how stable an infant is after going through the birth process by measuring five aspects of newborn functioning: reflex irritability (activity), heart rate (pulse), muscle tone (grimace), body color (appearance), and respiratory effort (Figure 2.24). A total score over seven is considered good, and most newborns score between seven and nine, with very few achieving ten.

Apgar Test

Points scored	0	1	2
A Activity (Muscle tone)	Not moving	Ability to flex arms and legs	Active
P Pulse (Heart rate)	Absent heart rate	Slow heart rate < 100 BPM	Fast heart rate > 100 BPM
G Grimace (Reflex irritability)	Floppy; no response to stimuli	Minimal response to stimuli	Quick response to stimuli
A Appearance (Body color/Oxygen)	Blue, pale, dusty or ashen skin color	Blue or ashen extremities; pink-toned body	Pink-toned body and extremities; high oxygen saturation level
R Respiration (Respiratory effort)	Not breathing	Slow or irregular breathing	Strong cry

FIGURE 2.24 The Apgar is a very quick test used to assess whether a newborn is healthy immediately following birth. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license; credit top: modification of work "Baby, Newborn, Child image" by Engin Akyurt/Pixabay, Pixabay Content License)

A score between four and six may require intervention for the newborn. Scores below four require care because they mean the newborn is not in good condition (American College of Obstetricians and Gynecologists, 2015). The Apgar test has limits, however. It detects only major neurological problems, not subtle ones, and scores are based on one moment in time. They can also be influenced by other factors, such as how sedated or medicated the birth mother is (which affects the newborn) and whether there was birth trauma such as anoxia (oxygen deprivation) (American College of Obstetricians and Gynecologists, 2015). Apgar scoring of appearance, which helps determine if a healthy amount oxygen is flowing in the blood, may also be more difficult to assess on newborns with a darker skin tone. Some guidelines therefore suggest measuring oxygen saturation directly with a pulse oximeter (Furness et al., 2024).

The **neonatal behavioral assessment scale**, or NBAS, is most often given by a pediatrician three to four days after birth but can be used to assess neurological behavior for up to two months after birth (Brazelton, 1995). It looks at twenty-eight factors related to behavior, including reflexes, in addition to assessing twenty neurological items on a four-point scale. It assesses how well infants are doing, shows their individuality, and can assess potential neurological issues that may require intervention. It looks specifically at three broad areas: the functioning of the autonomic nervous system and motor systems, how well the infant follows and responds to social stimuli like a face or voice, and infant states, such as being quiet and calm or actively moving while awake. The NBAS can be a useful tool in assessing neurobehavioral health in newborns (Malak et al., 2021).

Care of Infants with Low Birth Weight

Babies considered to have **low birth weight** generally weigh less than 5 lb 8 oz when born (Cutland et al., 2017). In contrast, a high weight for babies is typically defined as being more than 9 to 10 lb (Akanmode & Mahdy, 2023). There is a difference between having low birth weight and being "small for gestational age" (Cutland et al., 2017). Newborns who are small for their gestational age weigh less than the tenth percentile, meaning 90 percent of infants that age are larger (Cutland et al., 2017). Two reasons for low birth weight are premature birth and a condition called fetal growth restriction, which hampers the fetus's ability to grow.

Low birth weight does not automatically result in developmental problems. Some babies with low birth weight are healthy, and many catch up physically to others of the same age if they have good care and no other health issues or complications. However, low birth weight can indicate health risks, and babies born weighing less than 1 lb typically have the most complications and a higher mortality rate (Jeschke et al., 2016).

Maternal risk factors for having a newborn with low birth weight include the following (Adugna & Worku, 2022; K. C. et al., 2020):

- not gaining enough weight during pregnancy
- already having a child with low birth weight
- using drugs or alcohol, or smoking
- being under the age of twenty years when pregnant (DeMarco et al., 2021)
- being of advanced maternal age (typically over age thirty-five years) (Glick et al., 2021)
- having poor nutrition when pregnant (Cutland et al., 2017)
- lacking access to prenatal care

Poor access to prenatal care and poor nutrition are among the driving factors behind low birth weight, causing it to disproportionately affect babies born to those with lower socioeconomic status. In many countries, public health or government programs exist to bridge the nutritional gap for birth mothers with low income and those in poverty (UNICEF, 2024).

Babies with low birth weight who have complications are treated medically in much the same way as premature babies. Depending on their needs, they may require being seen by a neonatal specialist, being kept warm in an incubator, getting fed intravenously to help them gain weight, and receiving medical treatments to help them breathe if their lungs are not fully developed or strong (Soleimani et al., 2020).

Premature Birth

A **preterm infant (premature or preemie)** is any newborn born before thirty-seven weeks' gestation and weighing less than 5.5 lb. There are many risk factors associated with a premature birth, including the following maternal characteristics (CDC, 2024a):

- having already had a preterm child
- getting pregnant quickly after a previous birth (typically within a year)
- having health issues such as diabetes or high blood pressure
- using drugs or being a regular smoker
- being pregnant with multiples
- being under age eighteen years or over age thirty-five years
- having issues with the placenta, such as placenta previa, placental abruption, or bleeding
- having low socioeconomic status and/or food insecurity (lacking access to food of sufficient quantity or quality)

A pregnant person with risk factors associated with an increased chance of having a premature baby may receive steroid treatments before giving birth that help the fetus's lungs develop more quickly and improve the infant's chances of doing well once born (Htun et al., 2021). Sometimes, however, a baby is born early with no known risk factors.

Researchers have investigated the relationship between premature labor and socioeconomic status, food insecurity, and stress. They found that lacking prenatal care and experiencing stress and food insecurity were strongly related to having a child before the thirty-seventh week of pregnancy (Dolatian et al., 2018). Other research has found food insecurity to be strongly related to complications during pregnancy as well, including high blood pressure and gestational diabetes (Dewing et al., 2013; Sandoval et al., 2020). Infants born prematurely often need extended and costly care, which may further exacerbate the challenges faced by families who experience high levels of stress, food insecurity, and inconsistent access to medical care.

Currently Black women are much more likely to give birth prematurely than White or Hispanic women (Hollenbach et al., 2021; Scommegna, 2023). While socioeconomic factors such as lower income or disadvantaged neighborhood increase premature birth risks for new mothers, research is also revealing that structural racism is an influential factor particularly for U.S. Black mothers (Hollenbach et al., 2021; Scommegna, 2023). Maternal mortality rates are also significantly higher for Black and Native American women than for White women (Leonard et al., 2019). The CDC recommends a variety of community and health-care provider–based interventions and prevention efforts, such as improving and standardizing prenatal and postpartum care, to reduce maternal mortality health risks and disparities (CDC, 2024b).

LINK TO LEARNING

Watch this video to learn more about how racism harms pregnant mothers (https://openstax.org/r/104RacismPreg) and racial disparities in pregnancy care,.

Though some preterm births are unavoidable, there are several steps to help decrease the risk of giving birth before 37 weeks. These include eating healthily; getting enough sleep; avoiding excessive stress; trying to be active (even if by just taking a short walk daily); addressing medical conditions like diabetes or high blood pressure; going to prenatal check-up appointments; and not smoking, drinking, or taking drugs that might affect the pregnancy.

Premature infants are at higher risk of developmental issues and other ailments because their skin, lungs, nervous system, and digestive system still needed time to grow and develop before they were born. Some may face problems with respiration, digestion, and cardiac health (such as a slower heart rate). They may be more susceptible to infections or **failure to thrive**, meaning their height and weight are below the third percentile (only 3 of 100 full-term infants will be as small) (Mattison et al., 2003).

Infants born before 28 weeks are at greatest risk and require substantial medical care, usually from medical specialists called neonatologists, to have a chance of survival. Their lungs are not yet fully developed, and they did not have the time to develop the normal layer of body fat, so they may require help such as the use of a ventilator, oxygen hood, or CPAP machine to assist in breathing, a feeding tube, and a special incubator for warmth (Figure 2.25). They must also be monitored to ensure they have enough oxygen in their blood. These infants are at higher risk of having health problems that last a lifetime. Issues associated with being born prematurely and underweight are some of the leading causes of infant death.

(a) (b)

FIGURE 2.25 Medical interventions such as (a) ventilators and (b) incubators are tools used in neonatal intensive care units to help premature or high-risk newborns to recover and thrive. (credit a: modification of work "Lyra" by Chris Sternal-Johnson/Flickr, CC BY 2.0; credit b: modification of work "Incubator-tahrir" by United States Agency for International Development/Wikimedia Commons, Public Domain)

References

Adugna, D. G., & Worku, M. G. (2022). Maternal and neonatal factors associated with low birth weight among neonates delivered at the University of Gondar comprehensive specialized hospital, Northwest Ethiopia. *Frontiers in Pediatrics, 10*, Article 899922. https://doi.org/10.3389/fped.2022.899922

Akanmode, A. M., & Mahdy, H. (2023). Macrosomia. *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK557577/

American College of Obstetricians and Gynecologists. (2015). *The apgar score* [White paper]. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2015/10/the-apgar-score

American College of Obstetricians and Gynecologists. (2018). *Optimizing postpartum care* [White Paper]. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/05/optimizing-postpartum-care

American College of Obstetricians and Gynecologists (2020). Prelabor rupture of membranes: ACOG practice bulletin, number 217. *Obstetrics and Gynecology*, *135*(3), e80–e97. https://doi.org/10.1097/AOG.0000000000003700

Backes, E. P., & Scrimshaw, S. C. (Eds.). (2020). *Birth settings in America: Outcomes, quality, access, and choice*. National Academies Press. https://nap.nationalacademies.org/read/25636/chapter/1

Beinempaka, F., Tibanyendera, B., Atwine, F., Kyomuhangi, T., Kabakyenga, J., & MacDonald, N. E. (2015). Traditional rituals and customs for pregnant women in selected villages in Southwest Uganda. *Journal of Obstetrics and Gynaecology Canada*, *37*(10), 899–900. https://doi.org/10.1016/s1701-2163(16)30026-3

Berta, M., Lindgren, H., Christensson, K., Mekonnen, S., & Adefris, M. (2019). Effect of maternal birth positions on duration of second stage of labor: Systematic review and meta-analysis. *BMC Pregnancy and Childbirth, 19*, Article 466. https://doi.org/10.1186/s12884-019-2620-0

Brazelton, T. B., & Nugent, K. J. (1995). *Neonatal behavioral assessment scale* (3rd ed.). Mac Keith Press.

Cluver, C., Gyte, G. M., Sinclair, M., Dowswell, T., & Hofmeyr, G. J. (2015). Interventions for helping to turn term breech babies to head first presentation when using external cephalic version. *The Cochrane Database of Systematic Reviews, 2015*(2), Article CD000184. https://doi.org/10.1002/14651858.CD000184.pub4

Committee on Obstetric Practice. (2017). Committee Opinion No. 697: Planned home birth [White Paper]. *Obstetrics and Gynecology*, *129*(4), e117–e122. https://doi.org/10.1097/AOG.0000000000002024

Cutland, C. L., Lackritz, E. M., Mallett-Moore, T., Bardají, A., Chandrasekaran, R., Lahariya, C., Nisar, M. I., Tapia, M. D., Pathirana, J., Kochhar, S., Muñoz, F. M., & The Brighton Collaboration Low Birth Weight Working Group. (2017). Low birth weight: Case definition & guidelines for data collection, analysis, and presentation of maternal immunization safety data. *Vaccine*, *35*(48 pt A), 6492–6500. https://doi.org/10.1016/j.vaccine.2017.01.049

De Vivo, V., Carbone, L., Saccone, G., Magoga, G., De Vivo, G., Locci, M., Zullo, F., & Berghella, V. (2019). Early amniotomy after cervical ripening for induction of labor: A systematic review and meta-analysis of randomized controlled trials. *American Journal of Obstetrics & Gynecology*, *222*(4), 320–329. https://doi.org/10.1016/j.ajog.2019.07.049

DeMarco, N., Twynstra, J., Ospina, M. B., Darrington, M., Whippey, C., & Seabrook, J. A. (2021). Prevalence of low birth weight, premature birth, and stillbirth among pregnant adolescents in Canada: A systematic review and meta-analysis. *Journal of Pediatric and Adolescent Gynecology*, *34*(4), 530-537. https://doi.org/10.1016/j.jpag.2021.03.003

Desai, N. M., & Tsukerman, A. (2023). *Vaginal delivery*. StatPearls Publishing. https://pubmed.ncbi.nlm.nih.gov/32644623/

Dewing, S., Tomlinson, M., le Roux, I. M., Chopra, M., & Tsai, A. C. (2013). Food insecurity and its association with co-occurring postnatal depression, hazardous drinking, and suicidality among women in peri-urban South Africa. *Journal of Affective Disorders*, *150*(2), 460–465. https://doi.org/10.1016/j.jad.2013.04.040

Dolatian, M., Sharifi, N., & Mahmoodi, Z. (2018). Relationship of socioeconomic status, psychosocial factors, and food insecurity with preterm labor: A longitudinal study. *International Journal of Reproductive Biomedicine*, *16*(9), 563–570. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6312711/

Furness, A., Fair, F., Higginbottom, G., Oddie, S., & Soltani, H. (2024). A review of the current policies and guidance regarding Apgar scoring and the detection of jaundice and cyanosis concerning Black, Asian and ethnic minority neonates. *BMC pediatrics, 24*, Article 198. https://dx.doi.org/10.1186/s12887-024-04692-4

Galková, G., Böhm, P., Hon, Z., Heřman, T., Doubrava, R., & Navrátil, L. (2022). Comparison of frequency of home births in the Member States of the EU Between 2015 and 2019. *Global Pediatric Health, 9*, Article 2333794X2110709. https://doi.org/10.1177/2333794x211070916

Gallo, R. B. S., Santana, L. S., Marcolin, A. C., Duarte, G., & Quintana, S. M. (2018). Sequential application of non-pharmacological interventions reduces the severity of labour pain, delays use of pharmacological analgesia, and improves some obstetric outcomes: A randomised trial. *Journal of Physiotherapy*, *64*(1), 33–40. https://doi.org/10.1016/j.jphys.2017.11.014

Glick, I., Kadish, E., & Rottenstreich, M. (2021). Management of pregnancy in women of advanced maternal age: Improving outcomes for mother and baby. *International Journal of Women's Health, Volume 13*, 751–759. https://doi.org/10.2147/ijwh.s283216

Gregory, K., Jackson, S., Korst, L., & Fridman, M. (2011). Cesarean versus vaginal delivery: Whose risks? Whose benefits? *American Journal of Perinatology*, *29*(01), 07–18. https://doi.org/10.1055/s-0031-1285829

Halliday, L., Nelson, S. M., & Kearns, R. J. (2022). Epidural analgesia in labor: A narrative review. *International Journal of Gynecology & Obstetrics*, *159*(2), 356–364. https://doi.org/10.1002/ijgo.14175

Hao, J. J., & Mittelman, M. (2014). Acupuncture: Past, present, and future. *Global Advances in Health and Medicine, 3*(4), 6–8. https://doi.org/10.7453/gahmj.2014.042

Hollenbach, S. J., Thornburg, L. L., Glantz, J. C., & Hill, E. (2021). Associations between historically redlined districts and racial disparities in current obstetric outcomes. *JAMA Network Open, 4*(9), Article e2126707. https://doi.org/10.1001/jamanetworkopen.2021.26707

Htun, Z. T., Schulz, E. V., Desai, R. K., Marasch, J. L., McPherson, C. C., Mastrandrea, L. D., Jobe, A. H., & Ryan, R. M. (2021). Postnatal steroid management in preterm infants with evolving bronchopulmonary dysplasia. *Journal of Perinatology*, *41*, 1783–1796. https://doi.org/10.1038/s41372-021-01083-w

Hutchinson, J., Mahdy, H., & Hutchison, J. (2023). Stages of Labor. *StatPearls [Internet]*. StatPearls Publishing. https://pubmed.ncbi.nlm.nih.gov/31335010/
Jeschke, E., Biermann, A., Günster, C., Böhler, T., Heller, G., Hummler, H. D., & Bührer, C. (2016). Mortality and major morbidity of very-low-birth-weight infants in Germany 2008–2012: A report based on administrative data. *Frontiers in Pediatrics, 4,* Article 23. https://doi.org/10.3389/fped.2016.00023
Jiang, H., Qian, X., Carroli, G., & Garner, P. (2017). Selective versus routine use of episiotomy for vaginal birth. *The Cochrane Database of Systematic Reviews*, *2017*(2), Article CD000081. https://doi.org/10.1002/14651858.CD000081.pub3
K. C., A., Basel, P. L., & Singh, S. (2020). Low birth weight and its associated risk factors: Health facility-based case-control study. *PloS ONE*, *15*(6), Article e0234907. https://doi.org/10.1371/journal.pone.0234907
Kathawa, C. A., Arora, K. S., Zielinski, R., & Low, L. K. (2021). Perspectives of doulas of color on their role in alleviating racial disparities in birth outcomes: A qualitative study. *Journal of Midwifery & Women's Health 67*(1), 31–38. https://doi.org/10.1111/jmwh.13305
Leonard, S. A., Main, E. K., Scott, K. A., Profit, J., & Carmichael, S. L. (2019). Racial and ethnic disparities in severe maternal morbidity prevalence and trends. *Annals of Epidemiology*, *33*, 30–36. https://doi.org/10.1016/j.annepidem.2019.02.007
Lopez-Gonzalez D.M., & Kopparapu A.K. (2022). *Postpartum care of the new mother.* StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK565875/
Madden, K., Middleton, P., Cyna, A. M., Matthewson, M., & Jones, L. (2016). Hypnosis for pain management during labour and childbirth. *The Cochrane Database of Systematic Reviews*, *2016*(5), Article CD009356. https://doi.org/10.1002/14651858.CD009356.pub3
Malak, R., Fechner, B., Sikorska, D., Rosołek, M., Mojs, E., Samborski, W., & Baum, E. (2021). Application of the neonatal behavioral assessment scale to evaluate the neurobehavior of preterm neonates. *Brain sciences*, *11*(10), Article 1285. https://doi.org/10.3390/brainsci11101285
Mattison, D. R., Wilson, S., Coussens, C., & Gilbert, D. (Eds.). (2003). *The role of environmental hazards in premature birth: Workshop summary*. National Academies Press. https://nap.nationalacademies.org/read/10842/chapter/1
Moeti, C., Mulaudzi, F. M., & Rasweswe, M. M. (2023). The disposal of placenta among indigenous groups globally: An integrative literature review. *International Journal of Reproductive Medicine*, *2023*, Article e6676809. https://doi.org/10.1155/2023/6676809
Montagu, D., Yamey, G., Visconti, A., Harding, A., & Yoong, J. (2011). Where do poor women in developing countries give birth? A multi-country analysis of demographic and health survey data. *PLoS ONE*, *6*(2), Article e17155. https://doi.org/10.1371/journal.pone.0017155
Mott, S. L., Schiller, C. E., Richards, J. G., O'Hara, M. W., & Stuart, S. (2011). Depression and anxiety among postpartum and adoptive mothers. *Archive of Women's Mental Health, 14*, 335–343 https://doi.org/10.1007/s00737-011-0227-1
Mselle, L. T., & Eustace, L. (2020). Why do women assume a supine position when giving birth? The perceptions and experiences of postnatal mothers and nurse-midwives in Tanzania. *BMC Pregnancy and Childbirth, 20*, Article 36. https://doi.org/10.1186/s12884-020-2726-4
Nanji, J. A., & Carvalho, B. (2020). Pain management during labor and vaginal birth. *Best Practice & Research Clinical Obstetrics & Gynaecology*, *67,* 100–112. https://doi.org/10.1016/j.bpobgyn.2020.03.002
Obrowski S., Obrowski M., & Starski K. (2016). Normal pregnancy: A clinical review. *Academic Journal of Pediatrics & Neonatology*, *1*(1), Article 555554. https://doi.org/10.19080/ajpn.2016.01.555554
Okonta, P. I. (2012). Birthing positions: Awareness and preferences of pregnant women in a developing country. *The Internet Journal of Gynecology and Obstetrics*, *16*(1). https://ispub.com/IJGO/16/1/13974
Palomino, M. L. (2008, July 11). *Peru embraces vertical births to save lives*. Reuters. https://www.reuters.com/article/us-peru-birth-idINN7B38571520080711/
Peters, J., Logan, S. & Sneed K. B. (2021) A cross-cultural examination of prenatal care and birthing practices. *Chemical & Pharmaceutical Research. 3*(1), 1–7. http://dx.doi.org/10.33425/2689-1050.1019
Pomeroy, A. M., Koblinsky, M., & Alva, S. (2014). Who gives birth in private facilities in Asia? A look at six countries [Supplemental material]. *Health Policy and Planning*, *29*(1), i38–i47. https://doi.org/10.1093/heapol/czt103
Raines, D. A., Cooper D. B. (2023) *Braxton Hicks contractions*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK470546/
Regassa, L. D., Tola, A., Weldesenbet, A. B., & Tusa, B. S. (2022). Prevalence and associated factors of home delivery in Eastern Africa: Further analysis of data from the recent demographic and health survey data. *SAGE Open Medicine*, *10*, Article 205031212210880. https://doi.org/10.1177/20503121221088083
Sandoval, V. S., Jackson, A., Saleeby, E., Smith, L., & Schickedanz, A. (2020). Associations between prenatal food insecurity and prematurity, pediatric health care utilization, and postnatal social needs. *Academic Pediatrics, 21*(3), 455–461. https://doi.org/10.1016/j.acap.2020.11.020
Santana, L. S., Gallo, R. B. S., Quintana, S. M., Duarte, G., Jorge, C. H., & Marcolin, A. C. (2022). Applying a physiotherapy protocol to women during the active phase of labor improves obstetrical outcomes: A randomized clinical trial. *AJOG Global Reports*, *2*(4), Article 100125. https://doi.org/10.1016/j.xagr.2022.100125
Satone, P. D., & Tayade, S. A. (2023). Alternative birthing positions compared to the conventional position in the second stage of labor: A review. *Cureus*, *15*(4), Article e37943. https://doi.org/10.7759/cureus.37943
Scommegna, P. (2023, March 28). *Action to address pregnancy-related deaths among U.S. Black women urged by Dr. Shalon's maternal action project, PRB, and tank worldwide*. Population Reference Bureau. https://www.prb.org/news/action-to-address-pregnancy-related-deaths-among-u-s-black-women-urged-by-dr-shalon-maternal-action-project-prb-and-tank-worldwide/
Sharifipour, P., Kheirkhah, M., Rajati, M., & Haghani, H. (2022). The effect of delivery ball and warm shower on the childbirth experience of nulliparous women: A randomized controlled clinical trial. *Trials*, *23*, Article 391. https://doi.org/10.1186/s13063-022-06358-x
Šimják, P., Krejčí, H., Hornová, M., Mráz, M., Pařízek, A., Kršek, M., Haluzík, M., & Anderlová, K. (2022). Establishing the optimal time for induction of labor in women with diet-controlled gestational diabetes mellitus: A single-center observational study. *Journal of Clinical Medicine*, *11*(21), Article 6410. https://doi.org/10.3390/jcm11216410
Smith, C. A., Collins, C. T., Levett, K. M., Armour, M., Dahlen, H. G., Tan, A. L., & Mesgarpour, B. (2020). Acupuncture or acupressure for pain management during labour. *Cochrane Database of Systematic Reviews*, *2,* Article CD009232. https://doi.org/10.1002/14651858.cd009232.pub2
Sobczak, A., Taylor, L., Solomon, S., Ho, J., Kemper, S., Phillips, B., Jacobson, K., Castellano, C., Ring, A., Castellano, B., & Jacobs, R. J. (2023). The effect of doulas on maternal and birth outcomes: A scoping review. *Cureus*, *15*(5), Article e39451. https://doi.org/10.7759/cureus.39451
Soleimani, F., Azari, N., Ghiasvand, H., Shahrokhi, A., Rahmani, N., & Fatollahierad, S. (2020). Do NICU developmental care improve cognitive and motor outcomes for preterm infants? A systematic review and meta-analysis. *BMC Pediatrics*, *20*, Article 67. https://doi.org/10.1186/s12887-020-1953-1
UNICEF. (2024). *Maternal nutrition: Preventing malnutrition in pregnant and breastfeeding women.* https://www.unicef.org/nutrition/maternal
U.S. Centers of Disease Control and Prevention. (2024a, May 15). *Preterm Birth*. U.S. Department of Health and Human Services. https://www.cdc.gov/maternal-infant-health/preterm-birth/
U.S. Centers of Disease Control and Prevention. (2024b, May 15) *Maternal Mortality Prevention*. U.S. Department of Health and Human Services. https://www.cdc.gov/maternal-mortality/preventing-pregnancy-related-deaths/index.html
Vanderlaan, J., Hall, P. J., & Lewitt, M. (2018). Neonatal outcomes with water birth: A systematic review and meta-analysis. *Midwifery*, *59*, 27–38. https://doi.org/10.1016/j.midw.2017.12.023
Varner, C. A. (2015). Comparison of the Bradley Method and HypnoBirthing childbirth education classes. *The Journal of Perinatal Education*, *24*(2), 128–136. https://doi.org/10.1891/1946-6560.24.2.128
Walter, M. H., Abele, H., & Plappert, C. F. (2021). The role of oxytocin and the effect of stress during childbirth: Neurobiological basics and implications for mother and child. *Frontiers in Endocrinology*, *12*, Article 742236. https://doi.org/10.3389/fendo.2021.742236
Wax, J. R., Lucas, F. L., Lamont, M., Pinette, M. G., Cartin, A., & Blackstone, J. (2010). Maternal and newborn outcomes in planned home birth vs planned hospital births: A metaanalysis. *American Journal of Obstetrics and Gynecology*, *203*(3), 243.e1–243.e8. https://doi.org/10.1016/j.ajog.2010.05.028
World Health Organization (2018, February 15). *Individualized, supportive care key to positive childbirth experience, says WHO.* https://www.who.int/news/item/15-02-2018-individualized-supportive-care-key-to-positive-childbirth-experience-says-who
Wrede, S., Novkunskaya, A., Sarlio-Nieminen, J., & van Teijlingen, E. (2021). Birth systems across the world: Variations in maternity policy and services across countries. In Sandall, J. (Ed.). *The continuous textbook of women's medicine series: Obstetrics module volume 1*. Global Library of Women's Medicine. https://doi.org/10.3843/GLOWM.415183
Yenupini, J. A., Miller, M. L., Agbenyo, J. S., Ehla, E. E., & Clinton, G. A. (2023). Postpartum care needs assessment: women's understanding of postpartum care, practices, barriers, and educational needs. *BMC Pregnancy and Childbirth*, *23*, Article 502. https://doi.org/10.1186/s12884-023-05813-0

2.5 The Newborn in Context

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the importance of bonding during the neonatal period
- Describe common factors to consider in caring for a newborn
- Identify common problems experienced during the newborn period

In the soft glow of the bedside lamp, Maya and Candace look at their newborn, Olivia, with love and wonder. In the days since Olivia's arrival, they've realized the intricate link between their own well-being and Olivia's care. This is especially true for Candace, who is recovering from a cesarean section. It's not just about diapers and feeding schedules; it's about the quiet moments when they can both catch their breath amid the constant demands of parenthood. Candace's doctor stressed the importance of rest for both caregivers, so Maya takes Olivia with her to her brother's house for an hour while Candace naps. Candace and Olivia sit outside while a neighbor visits and Maya rests. Both parents find that spending time in the fresh air and sunshine helps tremendously to lift their mood and clear the fog of fatigue. They understand that care isn't a checklist of medical appointments; it's a holistic approach that embraces physical, emotional, and social well-being.

In this section, you'll consider how parents and other primary caregivers bond with their newborns as you explore some of the challenges they face in caring for them and adjusting to life after birth.

Bonding

The first few months after a baby is born are often called the fourth trimester because they are full of new discoveries and fast-paced development as the baby learns how to control their body, use their voice, and discover the world. However, babies still need others to care for them, because they are not yet able to see clearly, control their movements, or even feed themselves. All the physical, emotional, cognitive, and social milestones they will reach during infancy, and even aspects of social development beyond infancy, will depend on the bonding and attachment formed between primary caregivers, typically one or two parents, and the child (Joas & Möhler, 2021).

While **attachment**, the emotional connection a child feels toward their caregiver based on consistency and quality of care, takes longer to develop, **bonding** can start immediately. This is a one-way relationship consisting of a caregiver's emotional connection to the infant. It can begin as early as minutes after birth, motivated by the release of oxytocin, which promotes feelings of affection (Scatliffe et al., 2019). If all goes well during delivery, new caregivers may be able to hold their child right away and start forming feelings of affection toward the baby. Even if not, they will still have time to develop a strong bond with their newborn during the first few months of life. For adoptive caregivers, bonding is still highly likely to occur over the early years following adoption (Goldberg et al., 2013).

A newborn's brain starts to make new connections quickly as the baby takes in the world around them. One of the most important drivers of newborn brain development is the interaction between a newborn and their caregiver(s) (Figure 2.26). An infant's brain will create new connections and attain nearly 90 percent of its adult size by the age of three years (Winston & Chicot, 2016), and caregivers, including family, babysitters, and siblings, all play a role in that development. These new connections are guided by the infants' experiences. Interacting, playing, and communicating with infants helps drive those new connections and the infant's ability to learn language, create memories, and think. Healthy bonding between caregivers and an infant can help increase social skills lasting into the preschool years (Joas & Mohler, 2021).

FIGURE 2.26 Mutually enjoyable interactions promote the parent-infant bond. (credit: modification of work "Father, Child, Love image" by "balouriarajesh"/Pixabay, Pixabay Content License)

Caring for an Infant

Newborns require constant care, and this often means a caregiver needs time off work. Most industrialized countries offer some variation of paid **parental leave** policies, often with government-subsidized allowances that let caregivers stay home to care for their infant. Employers are also able to add time to the governmental benefits if they so choose (Hernandez, 2018). In the United States, no federal policy mandates paid leave for parents, though twelve weeks' unpaid leave is offered, and some states offer paid leave for various lengths of time (National Conference of State Legislatures, 2024).

INTERSECTIONS AND CONTEXTS

Parental Leave

With a few exceptions, including the United States and some small island nations in the South Pacific, most countries worldwide provide some form of federally mandated paid maternity leave and/or health benefits (Bipartisan Policy Center, 2022.). Estonia has one of the most generous maternity leave policies. Mothers there may take twenty weeks of paid leave, and up to sixty-two more weeks at reduced pay (World Population Review, 2024). In other countries, mothers can start their maternity leave before giving birth. In Chile, mothers can begin it a few weeks prior to their due date and then take another twelve weeks after giving birth (World Population Review, 2024).

Though benefits for fathers are less common, more than 60 percent of countries offer some type of paternity leave, though not all paternity leave is paid (Livingston & Thomas, 2019). In Japan, fathers can take up to several months of paid leave; Sweden offers ten weeks or more (Chzhen et al., 2019). Recently, South Korea altered its benefits to offer up to eighteen months of leave for both parents (Han-joo, 2023). Some U.S. states offer a few weeks of paid paternity leave, but just as for maternity leave in the United States, no federal law mandates it.

Providing access to some form of paid leave is becoming more critical as more women around the world are contributing more to their family income. In the United States, women often provide nearly half the family income; at least 70 percent of U.S. mothers work, and 40 percent are the sole or primary breadwinners (Glynn, 2019). Black mothers in the United States are two times more likely to be the primary breadwinner than their White counterparts (Glynn, 2019). Providing paid maternal leave is an essential consideration for improving

household and financial security for families.

Parental leave for same-sex couples also varies by nation, and also differs significantly according to whether the same-sex couple is female or male. More countries provide the same or similar paid parental leave after the birth of the child for female same-sex couples than for male same-sex couples. For example, the United Kingdom, Spain, Germany, and France provide the same duration of paid leave for same-sex female parents as for different-sex parents. However, those same countries provide a shorter duration of leave for male same-sex couples. Canada provides the same duration of parental leave regardless of the sex of the parents in same-sex parents (Wong et al., 2020). In the United States, no federally mandated parental leave is provided. Thirteen states and the District of Columbia mandate paid parental leave (Bipartisan Policy Center, 2024).

LINK TO LEARNING

The World Policy Analysis Center offers this interactive chart about paid parental leave policies (https://openstax.org/r/104ParentLeave) for parents across the globe.

What should caregivers expect after bringing their baby home? For the first few years of life, babies are completely dependent on others for their care. Some of the most important aspects of care include feeding the newborn, ensuring they are getting enough sleep, cleaning them, changing them, and interacting with them often. You will learn more about the physical health needs of infants in Chapter 3 Physical and Cognitive Development in Infants and Toddlers (Birth to Age 3), but here are a few basics of the first months.

Babies sleep most of the day and night, usually around sixteen hours a day, but initially only for a few hours at a time. Newborns benefit from getting adequate sleep in a safe environment (De Beritto, 2020). One safety issue, for example, is that they need to sleep on their backs and without soft bedding for the first year of life, to reduce the risk of sleep-related infant deaths (Moon et al., 2022).

Newborn babies need to eat every two hours, or between eight and twelve times within each twenty-four-hour period (Skinner et al., 2004). Breastfeeding, if desired and possible, should start within hours of birth. The mammary glands first produce colostrum, a nutrient-rich substance that is high in protective antibodies. Breast milk appears within a few days. Lactation consultants (who specialize in breastfeeding information and strategies) are available in many hospitals, and through organizations like La Leche League. If using formula, caregivers need to feed their baby one to two ounces at each feeding. Regardless of feeding style, babies typically lose a little weight during the first week of life and then start to gain weight thereafter.

Caregivers also need to make time to be close to their newborn and interact, including having “tummy time” sessions with them (Figure 2.27). These sessions, in which babies are placed on their stomach in a safe location while being supervised, help them build their neck, shoulder, and arm muscles so they can eventually lift their heads on their own and in time sit up, crawl, and walk. These sessions also help to prevent flat spots on the baby’s head (from spending too much time on their back) and help their overall motor development (Hewitt et al., 2020).

(a)

(b)

FIGURE 2.27 (a) During tummy time, an infant is placed on their stomach while an adult supervises, to help strengthen muscles and allow infants to practice controlling their muscle movements. (b) Swaddling is a way of wrapping a baby's body in a breathable, soft cloth to help them feel calm and secure. (credit a: modification of work "Tummy Time" by Nate Grigg/Flickr, CC BY 2.0; credit b: modification of work "006, All swaddled up" by Bev Sykes/Flickr, CC BY 2.0)

Babies are experiencing the world for the first time, and though they can hear, touch, taste, and smell, they cannot see well yet, or in color. It takes one to two months for them to build the muscles that move their eyes in sync and focus on objects, and it also takes time for their brain to learn how to read the signals coming from their eyes (Johnson, 2010). With all these new sensations and still-developing bodies, babies can easily become overwhelmed and do not yet know how to self-soothe (Pinto & Figueiredo, 2023; Rothbart et al., 1992). It can be difficult for caregivers to know how to help, but using any or all of "the five S's" can often calm the baby:

- swaddling (wrapping the baby snugly in a light blanket)
- putting the baby on their side or stomach (as long as they are awake)
- shushing
- swinging
- sucking (letting them suck on a nipple or bottle) (Harrington et al., 2012)

Adjusting to a New Baby

Newborns do not come with straightforward instructions, and each is unique in the way they adjust to life outside the womb. Still, new caregivers face many challenges in common (Table 2.9).

Challenge	Explanation
Recovering from giving birth	It can take close to six weeks to heal from the process of giving birth, longer if there were complications or a cesarean birth.
Feeding a newborn	Newborns may need time to be able to breastfeed or use a bottle. They must eat frequently and around the clock, which can reduce sleep time for new caregivers.

TABLE 2.9 Common Challenges during the First Month of Parenthood

Challenge	Explanation
Coping with lack of sleep	Most new caregivers do not get enough sleep until the newborn starts to develop a regular sleeping and feeding schedule, which may take weeks or months.
Learning how to calm an upset infant	Babies may cry often, and challenges like colic (prolonged unexplained crying) are upsetting to both baby and caregivers. It can take time and patience to learn how to calm newborns if they are upset, and it is a process of trial-and-error to learn when it is due to gas, hunger, overstimulation, or another cause.
Bonding with an infant	Bonding with babies may not happen immediately for everyone, and that is okay. The bonding process often takes time to develop.

TABLE 2.9 Common Challenges during the First Month of Parenthood

New caregivers must also adjust to new roles within their relationship and learn new caregiving tasks. Their success can be hampered by lack of sleep and the need to adapt to new priorities. Caring for a newborn is not always easy, and some aspects of parenthood might not be what they expected. In addition, there can be stress to "get it right" and feelings of guilt when things inevitably don't go as planned. New mothers often struggle with self-blame and maternal guilt if they feel they are not meeting expectations (Derella & Milan, 2021), so finding support and help is also important.

Often, however, new caregivers do not seek practical and/or emotional help early, and the stress of trying to cope by themselves can build up over time. Feelings of sadness and/or anxiety, often called the "baby blues," are common among new caregivers, and they can also slow the process of bonding (Trigo, 2021). Baby blues is estimated to be present in up to 80 percent of new caregivers (March of Dimes, 2021). If these feelings don't fade after several weeks, or if they become more severe, a birthing mother may be experiencing postpartum depression. Following are symptoms of this condition:

- intense feelings of sadness or despair
- anxiety or excessive worry experienced for no discernible reason
- loss of interest in activities previously enjoyed
- inability to sleep, eat, or maintain a daily routine
- feelings of panic
- frequent crying
- thoughts of harming self and/or the baby

Postpartum depression can disrupt the bonding process as well as interfere with daily life and quality of life for the mother (Hahn-Holbrook et al., 2018). It can occur at any time during the first year but typically appears around one to three weeks after birth (Hahn-Holbrook et al., 2018). Though the exact cause is not known, the onset might be related to hormonal changes that occur after birth, feelings of doubt about becoming a new parent, lack of support from family, and fatigue (Hahn-Holbrook et al., 2018). Fathers can suffer from postpartum depression as well. Some of the father's risk factors are whether they or their partner have depression or anxiety, stress due to low socioeconomic status, an unhealthy partnership, lack of social support, and issues with substance use (Wang et al., 2021).

Research has estimated the prevalence of postpartum depression to be almost 18 percent of births globally (Hahn-Holbrook et al., 2018). It occurs most frequently in countries with higher levels of wealth inequity, decreased access to postnatal care, and new mothers working full time, which can increase stress on them

(Hahn-Holbrook et al., 2018). In addition, a higher risk of postpartum depression exists for new caregivers living in disadvantaged neighborhoods, new caregivers of lower socioeconomic status, and Black mothers (Floyd James et al., 2023; Onyewuenyi et al., 2023). Early intervention and prevention efforts also tend to be less available for individuals facing neighborhood disadvantage or racial disparities (Liu et al., 2022; Onyewuenyi et al., 2023). Beyond postpartum depression, new caregivers may struggle with a range of emotions and/or mental health concerns (including anxiety, obsessive-compulsive disorder, and post-traumatic stress disorder) following the addition of a newborn (Meltzer-Brody et al., 2018). In any case, talking to a health-care provider or mental health expert can be a wise decision to support a healthy new family for all. It is also recommended that health-care providers specifically screen for symptoms of postpartum depression and other health needs both before discharge from the hospital and at postpartum medical visits.

LINK TO LEARNING

This short SciShow video on parental burnout (https://openstax.org/r/104PrntBurnout) illustrates how it differs from burnout that occurs due to working too much and how parental burnout may affect children.

References

Bipartisan Policy Center. (2022, March 1). *Paid family leave across OECD countries*. https://bipartisanpolicy.org/explainer/paid-family-leave-across-oecd-countries/

Bipartisan Policy Center. (2024). *State Paid Family Leave Laws Across the U.S.* https://bipartisanpolicy.org/explainer/state-paid-family-leave-laws-across-the-u-s/

Chzhen. Y., Rees, G., & Gromada, A. (2019, June). *Are the world's richest countries family friendly?: Policy in the OECD and EU* [White paper]. UNICEF. https://www.unicef.org/innocenti/reports/are-worlds-richest-countries-family-friendly

De Beritto, T. V. (2020). Newborn sleep: Patterns, interventions, and outcomes. *Pediatric Annals, 49*(2), e82–e87. https://doi.org/10.3928/19382359-20200122-01

Derella, O.J., & Milan, S. (2021). I felt like a terrible mom: Parenting-related cognitive processes maintaining maternal depression. *Journal of Child and Family Studies, 30,* 2427–2439. https://doi.org/10.1007/s10826-021-02053-8

Floyd James, K., Smith, B. E., Robinson, M. N., Thomas Tobin, C. S., Bulles, K. F., & Barkin, J. L. (2023). Factors associated with postpartum maternal functioning in Black women: A secondary analysis. *Journal of Clinical Medicine*, *12*(2), 647. https://doi.org/10.3390/jcm12020647

Glynn, S. J. (2019, May 10). *Breadwinning mothers continue to be the U.S. norm*. Center for American Progress. https://www.americanprogress.org/article/breadwinning-mothers-continue-u-s-norm/

Goldberg, A. E., Moyer, A. M., & Kinkler, L. A. (2013). Lesbian, gay, and heterosexual adoptive parents' perceptions of parental bonding during early parenthood. *Couple and Family Psychology: Research and Practice, 2*(2), 146–162. https://doi.org/10.1037/a0031834

Hahn-Holbrook, J., Cornwell-Hinrichs, T., & Anaya, I. (2018). Economic and health predictors of national postpartum depression prevalence: A systematic review, meta-analysis, and meta-regression of 291 studies from 56 countries. *Frontiers in Psychiatry, 8*, Article 248. https://doi.org/10.3389/fpsyt.2017.00248

Han-joo., K. (2023, January 9). *S. Korea to guarantee 18 months of parental leave for working parents*. Yonhap News Agency. https://en.yna.co.kr/view/AEN20230109007900315

Harrington, J. W., Logan, S., Harwell, C., Gardner, J., Swingle, J., McGuire, E., & Santos, R. (2012). Effective analgesia using physical interventions for infant immunizations. *Pediatrics*, *129*(5), 815–822. https://doi.org/10.1542/peds.2011-1607

Hernandez, D. (2018, January 23). *Fast facts: Maternity leave policies across the globe*. Vital Record. https://vitalrecord.tamhsc.edu/fast-facts-maternity-leave-policies-across-globe/

Hewitt, L., Kerr, E., Stanley, R. M., & Okely, A. D. (2020). Tummy time and infant health outcomes: A systematic review. *Pediatrics*, *145*(6), Article e20192168. https://doi.org/10.1542/peds.2019-2168

Joas, J., & Möhler, E. (2021). Maternal bonding in early infancy predicts childrens' social competences in preschool age. *Frontiers in Psychiatry, 12*, Article 687535. https://doi.org/10.3389/fpsyt.2021.687535

Johnson S. P. (2010). How infants learn about the visual world. *Cognitive Science*, *34*(7), 1158–1184. https://doi.org/10.1111/j.1551-6709.2010.01127.x

Liu, S., Ding, X., Belouali, A., Bai, H., Raja, K., & Kharrazi, H. (2022). Assessing the racial and socioeconomic disparities in postpartum depression using population-level hospital discharge data: longitudinal retrospective study. *JMIR Pediatrics and Parenting, 5*(4), Article e38879. https://doi.org/10.2196/38879

Livingston, G., & Thomas, D. (2019, December 16). *Among 41 countries, only U.S. lacks paid parental leave*. Pew Research Center. https://www.pewresearch.org/fact-tank/2019/12/16/u-s-lacks-mandated-paid-parental-leave/

March of Dimes. (2021, May). *Baby blues after pregnancy*. https://www.marchofdimes.org/find-support/topics/postpartum/baby-blues-after-pregnancy

Meltzer-Brody, S., Howard, L. M., Bergink, V., Vigod, S., Jones, I., Munk-Olsen, T., Honikman, S., Milgrom, J. (2018). Postpartum psychiatric disorders. *Nature Reviews Disease Primers*, *4*, Article 18022. https://doi.org/10.1038/nrdp.2018.22

Moon, R. Y., Carlin, R. F., & Hand, I. (2022). Sleep-related infant deaths: Updated 2022 recommendations for reducing infant deaths in the sleep environment. *Pediatrics*, *150*(1). https://doi.org/10.1542/peds.2022-057990

National Conference of State Legislatures. (2024, August 7). *State family and medical leave laws*. https://www.ncsl.org/labor-and-employment/state-family-and-medical-leave-laws

Onyewuenyi, T. L., Peterman, K., Zaritsky, E., Weintraub, M. L. R., Pettway, B. L., Quesenberry, C. P., Nance, N., Surmava, A.-M., & Avalos, L. A. (2023). Neighborhood disadvantage, race and ethnicity, and postpartum depression. *JAMA Network Open*, *6*(11), Article e2342398. https://doi.org/10.1001/jamanetworkopen.2023.42398

Pinto, T. M., & Figueiredo, B. (2023). Measures of infant self-regulation during the first year of life: A systematic review. *Infant and Child Development*, *32*(3), Article e2414. https://doi.org/10.1002/icd.2414

Rothbart, M. K., Ziaie, H. & O'Boyle, C. G. (1992). Self-regulation and emotion in infancy. *New Directions for Child and Adolescent Development,* 7–23. https://doi.org/10.1002/cd.23219925503

Scatliffe, N., Casavant, S., Vittner, D., & Cong, X. (2019). Oxytocin and early parent-infant interactions: A systematic review. *International Journal of Nursing Sciences*, *6*(4), 445–453. https://doi.org/10.1016/j.ijnss.2019.09.009

Skinner, J. D., Ziegler, P., Pac, S., & Devaney, B. (2004). Meal and snack patterns of infants and toddlers [Supplemental material]. *Journal of the American Dietetic Association*, *104*, s65–s70. https://doi.org/10.1016/j.jada.2003.10.021

Trigo, M. (2021). Postpartum depression: How it differs from the "baby blues." *European Psychiatry*, *64*(S1), S694–S695. https://doi.org/10.1192/j.eurpsy.2021.1839

Wang, D., Li, Y. L., Qiu, D., & Xiao, S.-Y. (2021). Factors influencing paternal postpartum depression: a systematic review and meta-analysis. *Journal of Affective Disorders, 293*, 51–63. https://doi.org/10.1016/j.jad.2021.05.088

Winston, R., & Chicot, R. (2016). The importance of early bonding on the long-term mental health and resilience of children. *London Journal of Primary Care*, *8*(1), 12–14. https://doi.org/10.1080/17571472.2015.1133012

Wong E., Jou, J., Raub A., & Heymann, J. (2020). Comparing the availability of paid parental leave for same-sex and different-sex couples in 34 OECD countries. *Journal of Social Policy. 49*(3):525-545. doi:10.1017/S0047279419000643

World Population Review. (2024) *Maternity leave by country 2024*. https://worldpopulationreview.com/country-rankings/maternity-leave-by-country

Key Terms

active genotype-environment correlation event in which individuals select particular environments or experiences based on their genotype

age of viability age at which a fetus born prematurely (before the thirty-seventh week of pregnancy) may have a chance of survival outside the womb, usually with intensive medical intervention

allele variant of a gene

amniocentesis test in which a needle is inserted through the mother's abdomen to take a sample of the amniotic fluid and look for chromosomal disorders and some types of genetic defects

Apgar test test administered to a newborn one minute after delivery and again at five minutes after delivery to assess their condition after birth; detects major abnormalities

attachment the emotional connection a child feels toward their caregiver based on consistency and quality of care

autosome chromosome in the nucleus that is not a sex chromosome

behavioral genetics interdisciplinary field that focuses on the study of heredity-behavior relationships

blastocyst small cluster of a few hundred cells formed shortly after conception

bonding one-way relationship consisting of a caregiver's emotional connection to the infant

cephalocaudal growth growth that occurs from head to feet, allowing a fetus to grow longer

cesarean birth medical procedure in which a doctor makes an incision in a birth mother's abdomen and uterus to deliver the fetus and placenta

chorionic villus sampling prenatal test that uses a placental tissue sample to determine whether chromosomal or genetic disorders are present in the fetus

chromosomal disorder condition that occurs with an incorrect number of chromosomes or results from structural abnormalities of the chromosome

chromosome strand of the DNA sequence in the nucleus of an individual's cells that carries genes transmitting hereditary information

codominant trait characteristic observed when two different alleles are expressed at the same time

conception union of sperm and ovum (egg)

congenital disorder any abnormality present at birth

contraception method used to reduce chances of conception

dizygotic twins (or fraternal) twins that occur when two ova are fertilized at the same time

DNA (also, deoxyribonucleic acid) molecule that contains an individual's genetic information

DNA methylation process whereby methyl groups are added to or removed from DNA, potentially causing changes in gene expression

dominant trait characteristic observed when only one copy of the allele is needed to express a phenotype

embryonic period second developmental period of pregnancy, during which the blastocyst becomes an embryo and organogenesis begins

evocative (or reactive) genotype-environment correlation event in which an individual's genetically influenced traits elicit an environmental response

failure to thrive situation in which a premature infant's height and weight are below the third percentile

fallopian tube part of the female reproductive system where egg is released and through which it travels to reach the uterus

fetal period last developmental period of pregnancy, during which the fetus grows quickly

gamete sex cell, the ovum or sperm, that carries twenty-three chromosomes

gene hereditary unit composed of a specific DNA sequence that occupies a specific location along a chromosome in an individual

genome complete sequence of an organism's DNA

genotype individual's particular genetic composition of alleles at specific locations

genotype × environment interaction event that occurs when the expression of a genotype depends on the environment

germinal period first developmental period of pregnancy, when conception occurs and the blastocyst travels through the fallopian tubes to the uterus
heterozygous trait in which an individual receives different alleles from each biological parent for a given trait
homozygous trait in which an individual receives identical alleles from each biological parent for a given trait
hormone chemical released by glands that controls and regulates bodily functions
implantation process in which a blastocyst embeds within the uterus
in vitro fertilization (IVF) form of assisted reproductive technology (ART) in which a fertilized egg is transferred into a uterus for implantation
incomplete dominance form of genetic expression in which both inherited alleles are partially expressed
infertility inability to successfully conceive after one year of trying
low birth weight birth weight less than 5 lb 8 oz
mass-to-specific growth growth in which large movements and structures develop before smaller or more specified movements and structures
meiosis type of cell division that occurs during gamete production and results in their containing only one member of each chromosome pair
mitosis type of cell division in which a cell duplicates itself and its DNA
monozygotic twins (or identical) twins that occur when a zygote splits into two clusters of cells, creating two genetically identical zygotes
multifactorial inheritance phenotype resulting from multiple genetic and environmental factors
natural childbirth a childbirth method using nonpharmaceutical techniques to help minimize pain and the need for medical intervention for the birth mother
neonatal behavioral assessment scale (NBAS) test assessing a newborn's neurological and physical health, typically given three to four days after birth
organogenesis the formation of organs during the embryonic period
ovary part of the female reproductive system that releases eggs (ova)
oxytocin hormone that helps initiate labor and plays a role in forming bonds with others
parental leave policies that allow parents to take time off work, often paid, to care for a newborn for a period of time
passive genotype-environment correlation event that occurs when parents provide offspring with both genes and environment
phenotype observable expression of someone's genome
placenta a temporary organ connecting the uterus to the umbilical cord that provides respiration and nourishment for the embryo in addition to eliminating metabolic wastes
pleiotropy most common form of genetic expression in which one gene influences multiple traits
polygenic trait trait influenced by several genes
preterm (premature/preemie) infant any infant born before thirty-seven weeks' gestation and weighing less than 5.5 lb
proximodistal growth growth that occurs from the center of the body outward
recessive trait trait that requires two identical alleles to be expressed
single-gene disorder condition caused by variation in a single gene
spontaneous abortion (also, miscarriage) loss of a pregnancy during the first twenty weeks
teratogen disease, drug, or environmental agent that can harm an embryo or fetus physically or influence health or behavior after birth
testes parts of the male reproductive system that help create and sustain sperm
umbilical cord a flexible tube connecting the embryo and the placenta
urethra part of the human reproductive system that, in males, transports and releases sperm
uterus part of the female reproductive system where a fertilized egg implants to develop
vagina muscular canal that connects the uterus to the outside of the female body
vas deferens tube that transports sperm from the testes to the urethra
vulva external aspects of the female reproductive system including the labia, clitoris, and vaginal opening

zygote single cell formed at conception and consisting of forty-six chromosomes, twenty-three from each parent

Summary

2.1 Genetics and Environment

- Humans have forty-six paired chromosomes after receiving twenty-three, half of each pair, from each biological parent.
- Genes are portions of the DNA sequence containing instructions for the body to make proteins that regulate development.
- Genotype is the unique combination of individual genes, and phenotype is the way these genes express themselves physically and behaviorally.
- Recessive genes exert their influence only in the absence of a dominant gene.
- Different types of genetic inheritance (recessive/dominant, incomplete dominance, codominance) determine the way the inherited genes are expressed.
- Most traits are influenced by numerous genes, and some genes influence multiple traits as well.
- Sometimes errors occur during cell division that can cause inherited genetic disorders, such as sickle cell anemia or Down syndrome.
- Genes and environments mutually influence gene expression, and phenotype is observed through epigenetic effects and gene-environment interactions.

2.2 Reproductive Systems and Conception

- The components of the female reproductive system include the vagina, uterus, and fallopian tubes. The vagina is where sperm enter the female reproductive system, traveling through the uterus and up the fallopian tubes to an ovum or egg, which one sperm may fertilize in the process of conception.
- The vas deferens, male urethra, and testicles are important parts of the male reproductive system. Sperm are created and stored within the testes, and if ejaculation occurs, sperm travel through the vas deferens to the urethra where they are ejected.
- Individuals can become parents via sexual contact (intercourse), assisted reproductive technology (ART) methods such as IUI or IVF, via a surrogate who carries and births the child for the parent(s), or through adoption.
- Social factors such as low income and lack of access to resources can pose obstacles that increase the chance of unintended pregnancies or prevent individuals from receiving treatment for infertility.

2.3 Pregnancy and Prenatal Development

- Prenatal development occurs in the germinal, embryonic, and fetal periods.
- During the germinal period, conception occurs, and the fertilized egg passes through the fallopian tubes to the uterus where it implants into the uterine wall.
- During the embryonic period, the implanted embryo divides into two parts. One becomes the infant, and the other develops into support structures. Organogenesis, or the creation of the body's organs, also occurs during the embryonic period.
- In the fetal period, the fetus grows, and the organs become refined.
- The age of viability is the age at which a fetus born prematurely may have a chance of survival outside the womb.
- Complications in prenatal development can be due to teratogen exposure or congenital disorders. These can cause spontaneous abortions.
- A variety of prenatal tests may be recommended to monitor the health and development of the fetus. Several lifestyle factors and access to medical care can increase the likelihood of a healthy pregnancy.

2.4 Childbirth and Perinatal Health

- Most U.S. births occur in hospitals, but those with low-risk pregnancies can also give birth in a birthing center or at home, often with the help of a midwife or other medical professional.
- Options to ease the discomfort associated with childbirth include epidural injections and other medications, as well as natural childbirth methods. Other alternatives are water birth, acupuncture, and massage.
- Once born, infants are given tests, including the Apgar test and the NBAS, to assess how well they are doing.
- Infants born prematurely or with low birth weight often require extra medical attention and may be slower to attain developmental milestones.
- Ways to prevent early birth and low birth weight include getting regular prenatal check-ups and care; making healthy choices regarding food, sleep, and exercise; avoiding excessive stress; and not smoking, drinking, or taking potentially harmful medications.

2.5 The Newborn in Context

- Navigating the first few weeks of parenthood can be difficult but rewarding. As the baby grows, so do parents.
- Attachment is a two-way interaction between a child and a caregiver based on consistency of care.
- Bonding with a newborn is a process and takes time, as does learning how to be a parent.
- Postpartum depression and other struggles can occur in both mothers and fathers. Treatments are available.

Review Questions

1. What combination of parent hair type would most likely result in a child's having wavy hair?
   a. One parent has curly hair, and the other has straight hair.
   b. One parent has curly hair, and the other has wavy hair.
   c. Both parents have wavy hair.
   d. Both parents have curly hair.

2. What is the primary function of most genes?
   a. determine a phenotype
   b. duplicate themselves
   c. code for proteins
   d. create mutations

3. What types of traits are caused by genes located on the sex chromosomes?
   a. sex-linked traits
   b. recessive traits
   c. polygenetic traits
   d. codominant traits

4. Which disorder results from a combination of multiple genetic and environmental factors?
   a. cystic fibrosis
   b. type 2 diabetes
   c. Down syndrome
   d. Fragile X syndrome

5. What type of gene expression occurs when one gene influences multiple traits and produces a variety of phenotypic outcomes?

a. incomplete expression
b. codominant expression
c. polygenic effects
d. pleiotropic effects

6. What is the process in which an ovum, or egg, is released from an ovary?
a. fertilization
b. ovulation
c. menstruation
d. specialization

7. What structure carries sperm from the testes to the urethra?
a. vas deferens
b. epididymis
c. seminal vesicles
d. prostate gland

8. What structure connects the uterus to the vagina in the female reproductive system?
a. vulva
b. cervix
c. fallopian tubes
d. ovaries

9. In which structure do sperm finish maturing and remain stored in the male reproductive system?
a. testes
b. prostate
c. vas deferens
d. epididymis

10. Where does fertilization typically occur within the female reproductive system?
a. uterus
b. ovaries
c. vagina
d. fallopian tubes

11. What is the sequence of events during the germinal period of prenatal development?
a. fertilization, blastocyst, implantation
b. blastocyst, implantation, fertilization
c. fertilization, implantation, blastocyst
d. implantation, fertilization, blastocyst

12. What is the name of the watertight fluid-filled sac that protects the embryo during the embryonic period of prenatal development?
a. chorion
b. blastocyst
c. amnion
d. placenta

13. What form of prenatal testing involves testing the amniotic fluid for genetic defects, some chromosomal abnormalities, and birth defects?

a. chorionic villus sampling
b. amniocentesis
c. ultrasound
d. maternal serum test

14. What is the term for any factor—disease, drugs, or other environmental agents—that can harm a fetus or embryo or influence health or behavior after birth?
a. blastocyst
b. trophoblast
c. chorion
d. teratogen

15. When is the neonatal behavioral assessment scale typically performed?
a. immediately after birth
b. within the first twenty-four hours of birth
c. within the first two to four days after birth
d. once the infant is three months of age

16. Failure to thrive in infants is defined as _____.
a. being slower than average in language development
b. showing insufficient weight gain and growth
c. having delayed motor skills
d. having delayed social skills

17. What is assessed in the grimace part of an Apgar test?
a. muscle tone
b. body color
c. heart rate
d. reflex irritability

18. What occurs during the third stage of labor?
a. delivery of the newborn
b. expulsion of the placenta
c. contractions and cervical dilation
d. rupture of the amniotic sac

19. What delivery location allows for a more familiar birthing environment but is typically only recommended for low-risk pregnancies?
a. home delivery
b. birthing center delivery
c. hospital delivery
d. institutional delivery

20. What does attachment in infants refer to?
a. physical growth and development
b. cognitive abilities present from birth
c. ability to lift their head on their own
d. emotional connection with caregivers

21. How does attachment differ from bonding in children?

a. Attachment is a result of the genetic inclination toward caring for others, while bonding is solely a response to external (environmental) factors.
b. Attachment is solely a response to external (environmental) factors, while bonding is a result of the genetic inclination toward caring for others.
c. Attachment is the emotional connection the caregiver feels for the child, while bonding is the emotional connection the child feels for the caregiver.
d. Attachment is the emotional connection the child feels for the caregiver, while bonding is the emotional connection the caregiver feels for the child.

22. Postpartum depression is characterized by _____.
a. a brief period of sadness that resolves on its own
b. lack of euphoria after childbirth
c. persistent feelings of sadness, anxiety, and exhaustion following childbirth
d. feelings of surprise following childbirth

Check Your Understanding Questions

23. What is the difference between molecular genetics and epigenetics?

24. Explain how single gene disorders differ from chromosomal disorders.

25. Describe at least two options for individuals who deal with infertility.

26. Briefly outline the path sperm take from production to ejaculation.

27. Describe three behaviors or activities that promote a healthy pregnancy and explain why they matter.

28. What are two possible causes of spontaneous abortion?

29. How is fetal development monitored and chromosomal or genetic issues assessed?

30. Explain the role of oxytocin in childbirth, specifically how it is involved in labor.

31. Briefly discuss potential causes and consequences associated with low birth weight.

32. Briefly discuss potential causes and consequences associated with premature birth.

33. What is the difference between baby blues and postpartum depression?

34. How does swaddling help a newborn?

Personal Application Questions

35. Reflect on your own physical traits, such as eye color, hair type, or height. How do you think these traits were influenced by the combination of chromosomes, DNA, and genes from your parents? Describe your understanding of the role of chromosomes, DNA, and genes in determining these traits.

36. Consider a health condition or trait that runs in your family, such as diabetes, heart disease, or a particular physical feature. Discuss how genetic inheritance and genotype might explain the presence of this condition or trait in your family. How does understanding your genotype help you understand your inherited features and/or health risks?

37. Think about your own personality and behavior. How do you believe your genes and environment have interacted to shape who you are today? For instance, consider traits like extraversion or openness, and behaviors such as enjoying telling jokes or having an interest in a certain activity. Provide examples of specific traits or behaviors and discuss how both genetic and environmental factors might have contributed to these aspects of your development.

38. Think about how the reproductive systems of biological males and females are similar and different. How

might understanding the anatomy and function of each system be important for someone considering a career in health care, education, or counseling? Reflect on how this knowledge can be applied in those fields.

39. Conception is a complex process influenced by timing, health, and biological factors. Imagine you are a health educator tasked with explaining the conception process to a high school audience. How would you break down the steps involved, from ovulation to fertilization, in a way that is both accurate and easy to understand for teenagers?

40. Infertility can be a deeply emotional challenge for many couples. Consider how you might approach a conversation with a friend or family member experiencing infertility. What emotional and practical support might be most helpful for them as they navigate their options?

41. Reflect on any prenatal influences that might have affected your development. This could include your mother's health, nutrition, or stress levels during pregnancy. How do you think these factors might have shaped aspects of your physical or psychological development?

42. Consider a friend or family member who has recently gone through pregnancy. What genetic counseling or prenatal screening methods did they use, if any? Discuss the importance of these methods in identifying and managing potential genetic disorders.

43. Imagine you are advising a couple who is expecting a baby. Based on your knowledge of prenatal and perinatal factors, what recommendations would you give them to ensure the health and well-being of both the mother and the developing baby? Discuss the role of environmental factors, genetic factors, and health-care practices in your advice.

44. Reflect on the stages of labor and childbirth. How would you explain the key stages of labor (dilation, active labor, and afterbirth delivery) to someone who has never experienced childbirth? How might this information be helpful for someone planning their birth experience or supporting a loved one through childbirth?

45. Consider the different birthing options available, including hospital births, birthing centers, and home births. If you were advising a friend or family member who is expecting a baby, what factors would you encourage them to consider when choosing their preferred birthing option? Discuss the potential benefits and risks of each setting.

46. For expectant parents considering natural childbirth, there are multiple techniques available to manage pain without medication, such as Lamaze, water birth, and acupuncture. If you were a childbirth educator, how would you present the benefits and challenges of these natural childbirth options? Which factors might influence an individual's decision to choose one technique over another?

47. Reflect on a time when you observed or experienced bonding between a parent and a newborn (perhaps with a sibling, cousin, or even yourself as a child). How did the caregiver foster this bond, and what impact did it seem to have on the newborn's comfort and security?

48. Caring for a newborn is a holistic process that includes more than just feeding and diapering. If you were advising new parents, what self-care strategies would you suggest to help them maintain their well-being while caring for their newborn?

49. The first few months of a baby's life are often called the "fourth trimester" because they are still in a very dependent stage. How do you think understanding the concept of the "fourth trimester" might change how caregivers approach soothing and interacting with newborns during this time?

Essay Questions

50. Describe the concept of genotype and how it differs from phenotype. Discuss how genetic inheritance works, including dominant and recessive alleles. Explain the concept of heritability and how it is

measured. Provide examples from the text to illustrate these concepts.

51. Discuss the interaction between genetic and environmental factors in shaping personality and behavior. How do nature and nurture work together to influence who we are? Include a discussion on epigenetics and how it plays a role in this interaction. Provide examples from the text to illustrate your points.

52. Reflect on different pathways to parenthood, such as surrogacy, adoption, and assisted reproductive technologies (ART). Imagine you are a counselor helping a couple or individual explore these options. What factors should they consider when deciding the best path for their planned family? Discuss the emotional, financial, legal, and practical implications of each option, using examples from the text to support your recommendations.

53. Discuss the importance of prenatal care in ensuring healthy fetal development. Describe key components of prenatal care and how they contribute to optimal outcomes for both mother and baby. Provide examples from the text and consider how these practices might apply to someone working in the health-care field.

54. Reflect on the importance of prenatal and perinatal education for expecting parents. How can education programs improve outcomes for both parents and babies? Use examples from the text to support your argument and discuss how this knowledge could be applied in a career in education or community health.

55. Assessing the health of both the birth mother and newborn is crucial immediately after birth. Imagine you are a pediatric nurse working in a hospital setting. How would you explain the importance of tests like the Apgar test and the Neonatal Behavioral Assessment Scale (NBAS) to concerned parents? Discuss how these tests evaluate the newborn's health, what information they provide, and how the results guide medical care. What role do these tests play in ensuring a newborn's well-being, and how might you address common concerns parents have regarding these assessments?

56. Postpartum depression is a serious condition that can impact both the caregiver and the newborn. Define postpartum depression and discuss the common symptoms, as well as how it differs from the "baby blues." Analyze the risk factors that contribute to postpartum depression and propose strategies that health-care providers and loved ones can use to support new parents. In your discussion, consider both medical interventions and community-based support systems. Additionally, explore the importance of reducing stigma around mental health struggles in new parents and the cultural factors that may influence how postpartum depression is recognized and treated.

Physical and Cognitive Development in Infants and Toddlers (Birth to Age 3)

3

FIGURE 3.1 Children undergo drastic changes during the period from infancy to toddlerhood. While these three sets of infant and toddler siblings share similar genetics and environments, differences in their development demonstrate the interplay between nature and nurture. (credit left: "Smiling toddler and newborn" by Joanne Lee/Flickr, CC BY 4.0; credit middle: "Children in leaves" by Kerry Ceszyk/Flickr, CC BY 4.0; credit right: "Cuddling siblings" by Shannon Lowey/Flickr, CC BY 4.0)

CHAPTER OUTLINE

3.1 Physical Development in Infants and Toddlers
3.2 Motor Development in Infants and Toddlers
3.3 Sensory Development in Infants and Toddlers
3.4 Cognition and Memory in Infants and Toddlers
3.5 Language in Infants and Toddlers

WHAT DOES PSYCHOLOGY SAY? At a play date with other parents and their young children, Ayah's mother Sabah is excitedly relating the changes she has recently seen in her six-month-old daughter. "All of a sudden, she can sit on her own, and she's trying so hard to crawl. She grabs anything within reach and says 'ba-ba-ba' whenever she sees my face. I can't wait to see what she does next." Later in the day, after her afternoon nap, Ayah explores a new toy by turning it over and over in her hands. When she drops it on the tray of her high chair, the toy lights up and begins to play music. Ayah laughs in delight and spends the next few minutes excitedly trying to get the toy to turn on again.

Ayah also has a two-year-old brother, Ben, who loves showing off "his baby" to friends and family. Sabah encourages him to help with Ayah's care by bringing diapers when Ayah needs to be changed and by including him when she reads stories to Ayah as part of their bedtime routine. Sabah has noted that despite many similarities in the way Ayah is developing and the way Ben developed at the same age, there are also

differences. For example, Ben was already crawling at six months of age but hadn't yet started to babble. Like many parents, Sabah wonders:

- What are the next motor milestones that Ayah will reach?
- When might Ayah say her first word?
- Is Ayah showing typical exploratory skills for her age?
- Are the individual differences Sabah is observing between her two children typical?

In this chapter, you'll consider these questions and others related to the expansive developments in physical growth and ability during this stage, including the way children learn through the use of sensory skills and memory, and the way language develops.

3.1 Physical Development in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify patterns of physical growth in infants and toddlers
- Describe sleep patterns and safe practices for putting a young child to sleep
- Describe eating patterns and factors that influence eating preferences
- Describe typical brain growth and maturation in infancy and toddlerhood
- Identify health risks in the first two years of life

Alexander weighed almost 10 pounds at birth. That put him in the top fifth percentile for weight, meaning he was bigger than 95 percent of newborn babies. Today at his eighteen-month checkup, his pediatrician comments that Alexander is now in the fiftieth percentile for his weight. Alexander's adoptive parents ask whether they should be concerned that he has dropped to a lower percentile, but the pediatrician explains that many factors influence growth during the first few years of life, including multiple genes and environmental experiences. By toddlerhood, all these factors together will move most children into a percentile that will likely stabilize in later childhood.

The first two years of life are a time of incredible change. The earliest months can be a haze for many new parents and caregivers, who may be feeling sleep deprived and struggling to learn what their baby needs or wants. But a few months later, a baby who used to wake hourly may sleep for longer stretches. Caregivers find joy in the baby's evolving smiles and coos. And two years later, that toddler may well tell grownups what they want or don't want by saying a few words or running toward a favorite toy or turning away from a disliked food.

There are many typical changes in the first two years of life, starting with patterns of growth and maturation in weight, height, and head size. Additional considerations include sleep and feeding, important aspects of health and development at any age, and moving on to brain growth and health risks. Moreover, cultural, social, and other experiences may influence maturation in these areas.

Patterns of Growth and Maturation

Growth in utero and the first two years of life follows three predictable patterns. Recall that in the cephalocaudal pattern, growth starts with the head and moves downward toward the torso and then the legs and toes Figure 3.2. For example, the head and upper body will grow before the rest of the body. In the proximodistal pattern, development begins in the center of the body and moves outward. That is, before birth the internal organs develop before the arms and legs. After birth, the infant's torso grows before the arms and legs, followed by the toes and fingers. In addition to growth, children will usually develop control over the center of their body first and then gradually gain control over the parts of their body further from their middle such as their hands and feet. This is why you typically see infants reaching for objects before they can successfully grasp and manipulate toys.

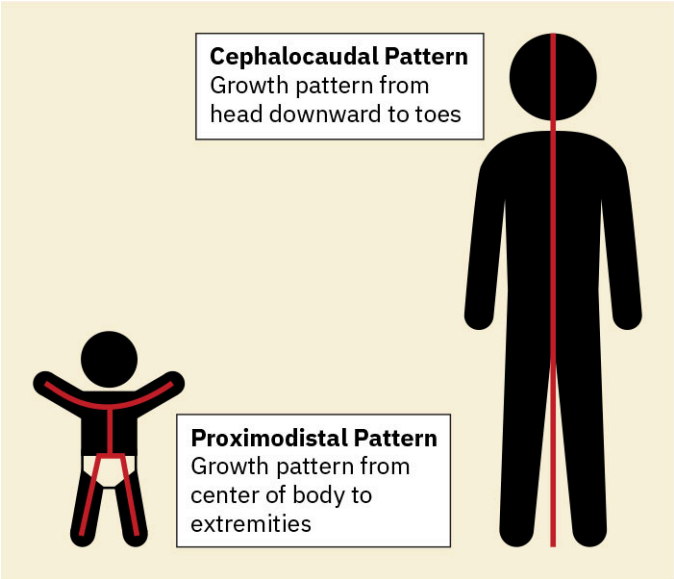


FIGURE 3.2 Proximodistal growth occurs at the center of the body before the extremities, whereas cephalocaudal growth begins at the head of the body before moving to the lower body. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The third pattern of growth is the mass-to-specific pattern, which begins with gross motor skills (controlled by large muscle groups) and moves to fine motor skills (controlled by smaller muscle groups). During infancy, children make tremendous gains in gross motor skills, such as rolling over and sitting, before they focus on fine motor skills such as grasping objects and feeding themselves.

Other dramatic physical changes occur after birth as well. For example, newborns may temporarily have an irregular cone-shaped head due to the birthing process, and/or downy hair (lanugo) on the shoulders and back that typically disappears in the first weeks or months. By around eleven weeks, newborns have gained enough weight to help them regulate their body temperature (Joseph et al., 2015). Teething occurs during the first year as well, with a first tooth typically emerging between four and six months (but sometimes after the first birthday). The bottom front teeth usually develop first Figure 3.3, followed by the top front teeth, and most children will have all their teeth by the time they're two or three years old.

FIGURE 3.3 Signs of teething in infants include sore gums, flushed cheeks, rubbing of ears, more than usual dribbling, and poor sleep. (credit: modification of work "Baby aaron" by Philippe Put/Flickr, CC BY 2.0)

Among all these milestones, professionals usually monitor a few specific changes: weight, height, and head circumference.

Weight, Height, and Head Circumference

Average birth weight in the United States is about 7.5 pounds, and average length is 19.5 inches (Centers for Disease Control and Prevention [CDC], 2010), but average birth weight varies globally. For example, in Africa it is 6.9 pounds (3,149 grams), followed by Central America (2,874 grams or 6.33 pounds) and Asia (2,713 grams or 5.98 pounds) (Marete et al., 2020). In the United States, newborns weighing less than 5.5 pounds are considered low birth weight, which can be a risk factor for developmental problems. Rates of low birth weight also vary by region. Approximately 10 percent of U.S. babies are low or very low birth weight (less than 3 pounds 4 ounces) (Osterman, 2024). The rate is lower in Africa (3.9 percent) but higher in both Central America (15.6 percent) and Asia (20.2 percent) (Marete et al., 2020). Many babies with low birth weight are able to catch up on their growth and weight gain over the first couple of years (Vizzari et al., 2023).

During their first week, newborns lose about 5 to 8 percent of their birth weight as they adjust to life outside the womb, but they typically regain it by the end of the second week (Graber, 2023). From then on, they generally gain 4 to 8 ounces per week and can grow 1.5 to 2 inches in their first month (Graber, 2023). Birth weight typically doubles by five months, and the average twelve-month-old weighs 22 pounds (Graber, 2023). After the first year, growth slows, and children gain about 5 pounds in the next year. Meanwhile, infants grow about 1 inch per month during the first year, and another 4 to 5 inches by age two years (Graber, 2023) (Figure 3.4).

FIGURE 3.4 Look across these two sets of pictures of the same child growing from infancy to toddlerhood. Some common milestones across this period include raising the upper body, standing while holding onto an object for support, increasing development of fine motor skills, and growth in gross motor skills. What changes are apparent? (credit “6 months” top: “Child crawling on play mat” by Kerry Ceszyk/Flickr, CC BY 4.0; credit “12 months” top: “Child outside” by Kerry Ceszyk/Flickr, CC BY 4.0; credit “18 months” top: “Child dyeing eggs” by Kerry Ceszyk/Flickr, CC BY 4.0; credit “24 months” top: “Child with snowman” by Kerry Ceszyk/Flickr, CC BY 4.0; credit "6

months" bottom: "Child sitting" by Sarah Evans/Flickr, CC BY 4.0; credit "12 months" bottom: "Child with soccer ball" by Sarah Evans/Flickr, CC BY 4.0; credit "18 months" bottom: "Child in swing" by Sarah Evans/Flickr, CC BY 4.0; credit "24 months" bottom: "Child playing with blocks" by Sarah Evans/Flickr, CC BY 4.0)

Monitoring head circumference is crucial for the early detection of cognitive problems during early childhood, and this measure is positively correlated with cognitive functioning in children and adults (Gale et al., 2006). In a child's first year, the skull grows about 0.4 inches (1 cm) per month. At birth, the head is disproportionately large, about one-quarter of total body length. In adulthood, the head is approximately one-eighth of total body length. The proportion of the head to the body is part of the reason it's hard for a newborn (or even a two-month-old) to raise their head.

Growth as an Indicator of Healthy Development

Physical growth is influenced by culture, environment, and genetics and their interaction, including epigenetic processes occurring both prenatally and after birth (Getaneh et al., 2021; Koemel & Skilton, 2022; Muglia et al., 2022). Nutrition in utero and in early life affects physical growth and individual health and may be related to health issues such as allergies (Acevedo et al., 2021).

Pediatric health providers typically measure the child's height and weight during routine wellness visits and enter them in a **growth chart**. Growth charts are percentile curves that track how the child is developing according to their age. The World Health Organization's (WHO) growth charts are internationally standardized, and separate versions exist for boys and girls Figure 3.5. The CDC recommends the WHO Growth Charts be used for children ages two years and younger (CDC, 2010).

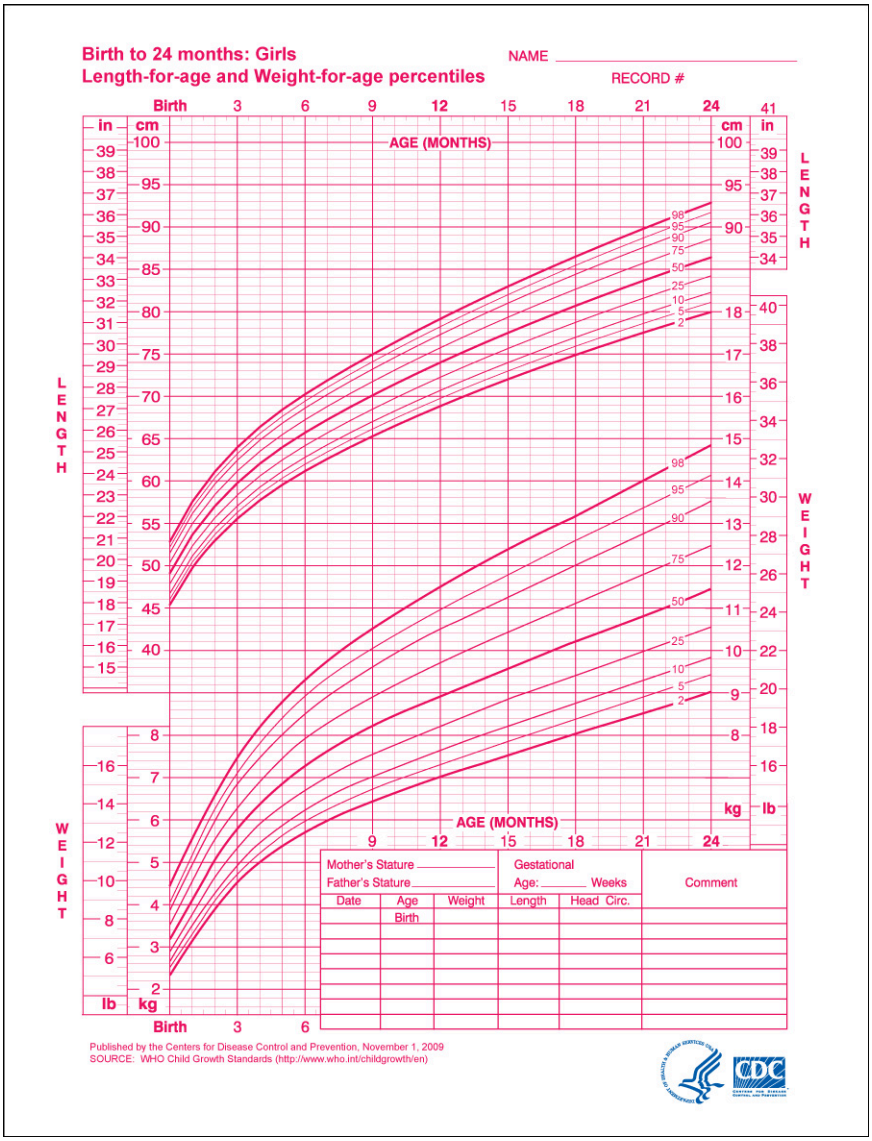


FIGURE 3.5 This is the WHO chart for girls from birth to age twenty-four months. What is the typical length (height) and weight for a twelve-month-old? (credit: modification of work "Birth to 24 months: Girls Length-for-age and Weight-for-age percentiles" by WHO Child Growth Standards/Centers for Disease Control and Prevention, Public Domain)

LINK TO LEARNING

Growth charts are used to track changes in body measurements in children. They are useful for seeing trends in growth over time as well as for identifying any concerns about a child's rate of growth. The WHO Growth Charts (https://openstax.org/r/104WHOGrowth) lets you view charts for a variety of growth measures for boys and for girls between birth and 2 years of age.

Growth charts measure height/length for age, weight for age, and height-to-weight ratio. By showing trends over time, they can help identify any growth problems. For example, if a child typically in the fortieth percentile for weight drops to the twentieth percentile in one year, the doctor will look for possible reasons. Growth charts are also used to identify failure to thrive, a condition in which growth is significantly below the norm for the child's age. The most common cause of failure to thrive is inadequate caloric intake, but other risk factors include medical conditions and environmental factors such as food insecurity or abuse or neglect

(Goodwin et al., 2023). Failure to thrive can result in developmental delays if not resolved (Hussein et al., 2023).

Irregular growth patterns could indicate health or nutrition problems and a need for intervention. However, a child's gestational age, birth weight, and parents' stature also influence growth patterns and account for individual differences, as do some cultural factors. For example, in Papua New Guinea, breastfeeding is universal and continues until children are five years of age. In addition, the typical diet is low in protein. This pattern of nutrition is believed to be the reason some individuals in this region tend to be smaller overall and to grow slowly (Jenkins et al., 1984).

Sleep and Variations

Children's overall health is also influenced by their sleep. Sleep is a **biopsychosocial** process, meaning it is influenced by biological, psychological, and social factors. It is essential for infant brain development, immune support, and growth (Liu et al., 2023), and involve various sleep patterns, practices, and safety measures.

Development of Sleep Patterns

At two years old, children will have spent about 33 percent more time asleep than awake. What happens while young children sleep? To study sleep, researchers use an **electroencephalogram (EEG)**. These are images of brain oscillations or waves created by the electrical activity of neurons and captured by a cap fitted with electrodes. The recorded height and speed of the wave indicate the type of sleep occurring.

There are two types of sleep. **REM** is rapid eye movement sleep, sometimes called active sleep because the eyes move while closed, and EEG waves in this sleep are similar to EEG waves in waking. REM sleep includes dreaming, memory consolidation, emotional processing, and brain development. **NREM** or non–rapid eye movement sleep is divided into three stages: stage 1 is the lightest sleep and stage 3 the deepest. NREM sleep consists of deeper levels of relaxation including slowed heart rate and respiration. A complete sleep cycle includes REM and NREM sleep and takes about ninety minutes for adults and children older than five years. Around two to three years of age, however, the sleep cycle is sixty minutes.

REM sleep occurs more often and lasts longer for infants than for preschoolers, but preschoolers still get more REM sleep than adults. Approximately 50 percent of sleep is REM sleep up until the first year, and then NREM sleep increases until adulthood, when REM sleep governs about 20 to 25 percent of our sleep. We experience more variation in sleeping patterns during our first year than at any other point in our lives (Table 3.1). Compare these recommendations: a newborn should sleep fourteen to seventeen hours a day, and a two-year-old should sleep eleven to fourteen hours, whereas an adult should sleep between seven and nine hours (Mireku & Rodriquez, 2021).

Age	Nighttime Sleep	Daytime Sleep	Total Sleep
Newborn	8–9 hours	8 hours	16 hours
3 months	9–10 hours	4–5 hours	15 hours
6 months	10 hours	4 hours	14 hours
9 months	11 hours	3 hours	14 hours
1 year	11 hours	3 hours	14 hours

TABLE 3.1 Typical Sleep Patterns for Newborn to Two Years Old

Age	Nighttime Sleep	Daytime Sleep	Total Sleep
1.5 years	11 hours	2.5 hours	13.5 hours
2 years	11 hours	2 hours	13 hours

TABLE 3.1 Typical Sleep Patterns for Newborn to Two Years Old

Newborns can't distinguish night from day and require multiple nighttime feedings, but they will start to sleep less during the day by three months. At around six months of age, infants typically begin waking less often at night. By twelve months of age, most infant sleep occurs at night (Barry, 2020), but night waking can continue through the first two years of life (Paavonen et al., 2020). Fragmented sleep can be considered a sleep problem, particularly in some Western cultures where night waking and bed sharing are less typical (Barry, 2021).[1] As a result, many guidelines and recommendations about infant sleep in these cultures emphasize the need for solitary and continuous sleep.

Infant Sleep Assistance

Infants offer cues that they are ready to sleep by crying, yawning, rubbing their eyes, or being fussy (when overtired). But this doesn't always mean they get to sleep quickly or easily. In some Western societies, bedtime strategies include physical comforting (cuddling), movement (rocking, car rides), social comforting (songs, stories), and passive comforting (standing or sitting nearby). In rural Guatemala as well as in many other areas, swaddling (tightly wrapping the infant in fabric during sleep for its calming effect) is a common practice (Oh et al., 2024) (Figure 3.6). Mayan mothers typically hold their children but do not use stories or lullabies. Another strategy that has been shown to promote sleep in crying infants is brief (five-minute) carrying by caregivers (Ohmura et al., 2022).

FIGURE 3.6 A child swaddled in a blanket for sleep. Some blankets are made for this purpose. (credit: "Swaddled infant" by Joanne Lee/Flickr, CC BY 4.0)

1 This study (Barry, 2021) uses the term "Western."

Some Anglo European cultures, such as the United States and United Kingdom, tend to favor infant autonomy for getting to sleep (Giannott & Cortesi, 2009),[2] meaning the baby is encouraged to fall asleep on their own, perhaps with self-soothing mechanisms like a soft toy or a pacifier. Another option is sleep training, which is sometimes suggested for infants over six months of age (Reuter et al., 2020). One sleep training method is the Ferber (or "cry it out") method**,** in which parents leave the child alone for a set time to help develop the ability to fall asleep independently, even if the baby cries. Another sleep training option is a soothing bedtime routine, which creates positive associations with bedtime.

Many activities in Table 3.2 can form part of a bedtime routine. A caregiver might give the baby a bath, read a story, turn down the lights, put on some quiet music while rocking the baby, and then place the baby in bed. A few strategies, such as rocking and feeding, can sometimes reduce the baby's ability to fall asleep independently because babies may become reliant on these external cues from caregivers to sleep and thus may not develop their own self-soothing strategies. Sleep researchers recommend putting the baby down when they are relaxed but before they fall asleep and soothing them rather than picking them up again.

Bedtime Activity	Description
Swaddling	Wrapping infant in a blanket to reduce movement; should typically be stopped when the infant can turn over
Rocking	Holding the baby while swaying, or rocking them in a cradle
Bathing	Giving a bath before bed, perhaps adding a gentle massage
Reading	Reading a simple story
Singing	Singing a lullaby or other quiet song
Darkening the room	Signaling the brain to release sleep hormone as well as reducing the possibilities of environmental stimulation
Playing a sound machine	Using only enough volume to mask other noises
Feeding	Breastfeeding or bottle feeding until the baby is asleep

TABLE 3.2 Bedtime Routines

Research has demonstrated the efficacy of behavioral interventions and sleep health education in treating sleep problems during infancy and early childhood (Liu et al., 2023). Behavioral interventions often focus on the parents' behavior, training them to allow the child to self-soothe, such as by waiting a few minutes before comforting a crying six-month-old. These interventions are associated with improved night sleep for both the parent and infant, and reduced symptoms of maternal depression (Liu et al., 2023).

Infant Sleeping Arrangements and Safety

Infant sleeping arrangements, where the infant sleeps and with whom, can be a controversial topic and one deeply influenced by familial and cultural factors. Infants typically sleep separately from parents in the United States, United Kingdom, and Australia, though that can include sleeping in a crib or bassinet in the same room. However, even within these countries, variations can range from having a separate room for an infant to **co-sleeping**, in which the infant and caregivers share the same bed. Globally, co-sleeping is a common practice (Barry, 2017) adopted by as many as 70 percent of families (Huang et al., 2010). In the United States, the rate of

2 This study (Giannotti & Cortesi, 2009) uses the term "Anglo European."

regular or occasional co-sleeping has risen to 50 percent over the past two decades, suggesting a possible cultural shift (Austin et al., 2017).

No matter which sleep methods and arrangements caregivers choose, they need to consider the infant's safety. A **sudden unexpected infant death (SUID)** occurs when an infant under one year of age dies unexpectedly, often while asleep (Figure 3.7). SUID occurs through accidental suffocation, unknown causes, and **sudden infant death syndrome (SIDS)** (Sidebotham et al., 2018). SIDS is deemed the cause when the death occurs during sleep and evidence does not indicate a specific single cause. Some research studies associate SIDS with the body's failing to regulate physical functions, like processing oxygen and carbon dioxide (Kim & Pearson-Shaver, 2023). SIDS has been a leading cause of death in infancy in many countries for decades (Sidebotham et al., 2018).

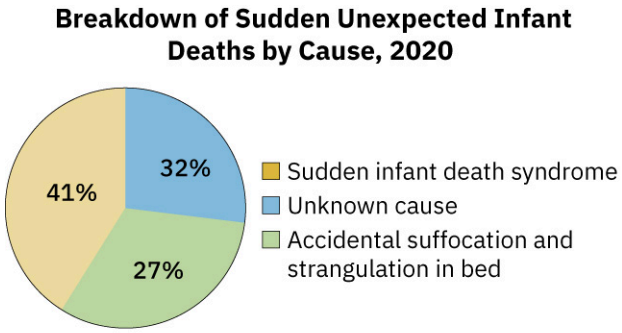


FIGURE 3.7 Sudden unexpected infant deaths (SUIDs) include deaths attributed to sudden infant death syndrome as well as to suffocation and strangulation deaths. However, almost one-third of SUIDs occur from no known cause. (data source: CDC/NCHS; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In 1994, Back to Sleep and similar campaigns were introduced in the United States, several European countries, and New Zealand to reduce infant deaths related to sleep. These efforts recommended back or side sleeping for newborn infants. For example, sleeping on their backs reduces infants' risk of choking or aspiration (Michigan.gov, n.d.; Moon & Task Force on Sudden Infant Death Syndrome, 2011). Similar campaigns were introduced in other countries, and rates of SIDS decreased between 42 and 92 percent (Sidebotham et al., 2018).

In the United States, the American Academy of Pediatrics (AAP) currently recommends the A-B-C method, which prioritizes the infant sleeping alone (A), on their back (B), and in a crib (C) (Moon et al., 2024). Sleeping alone in a bed that is free of soft objects, toys, and blankets reduces infants' suffocation risk. Infants should always be put to sleep on their backs to reduce choking risk. As they get older, they will learn to roll over and move around. Infants should sleep in a safety-approved crib or bed rather than slings, high chairs, or other furniture in order to remain flat, which further reduces risks of suffocation and choking. Use of these methods has reduced the incidence of sleep-related deaths (Shapiro-Mendoza et al., 2023). The AAP also recommends room sharing for the first six months to reduce the risk of SIDS (Moon et al., 2022).

However, many parents find these recommendations challenging, particularly those related to co-sleeping (Moon et al., 2024). Co-sleeping has both risks and benefits. Some studies have associated it with an increased risk of SIDS, specifically when the primary caregiver has used substances such as cigarettes or alcohol (Bains & Mittal, 2023).[3] Co-sleeping may also increase sleep problems in toddlers (Yang et al., 2022). However, the benefits can include more sleep for both the caregiver and baby, as well as easier breastfeeding at night and increased duration of breastfeeding (Salm Ward, 2015). Sleep choices may vary based on each family's needs, lifestyle, and culture. For example, caregivers who breastfeed and do not drink heavily or smoke may find co-sleeping beneficial.

LINK TO LEARNING

Red Nose Australia outlines six recommendations for safe sleep and co-sleeping (https://openstax.org/r/104SafeSleep) in this article.

Feeding and Variations

Like sleep practices, infant feeding reveals different cultural practices and social preferences. Should infants be bottle fed, breastfed, or both? Should they receive human milk, formula, or a combination? When should they get some solid foods? What types of solids should older infants have?

Human Milk and Formula

Caregivers may choose to feed their infant human milk, infant formula, or a combination of the two during the first six months of life. Each of these nutrient sources may be delivered via bottle feeding, breastfeeding, or chestfeeding (using a feeding tube attached to the nipple) (Bartick et al., 2021). Human milk may come from the birth mother or be donated (Bartick et al., 2021). The WHO, the AAP, and UNICEF recommend starting breastfeeding within one hour of birth and breastfeeding exclusively for the first six months of life (Meek et al., 2020). Human milk is associated with a lowered risk of SIDS (Moon et al., 2022) and provides nutrients and antibodies that reduce infants' risk of respiratory tract infections, diabetes, colds and flu, and middle-ear infections (Meek et al., 2020). It also protects against gastrointestinal infections, particularly critical in developing countries where the water often isn't safe for mixing with infant formula. In these countries, the risk of infant death from diarrhea and other infections is reduced when infants are exclusively breastfed (WHO, 2023).

In some cases, however, such as when a mother has certain health conditions or is taking certain medications that get passed through human milk, breastfeeding may not be advised. In addition, some parents may be unable to breastfeed due to work and family arrangements, physical ability, or adoption. Some may choose not to breastfeed based on individual preferences or needs. Finally, sometimes supplementing with formula is recommended, such as when the baby is failing to gain weight well or the nursing parent struggles to supply milk. Table 3.3 shows some of the benefits of human milk and formula feeding.

Human Milk	Formula
Digestion: Human milk contains balanced nutrients that are easily digested by young infants.	Timing: Formula takes longer to digest, so infants can go longer between feedings and sleep for longer durations.
Immunity: Human milk contains immunoglobulins that provide immunity to many diseases.	Caregiver's diet: Caregiver doesn't need to worry about what they are eating or drinking, including alcohol.
Financial cost: Human milk may be less expensive or have no cost, though pumping supplies do entail a cost.	Options: Formula comes in a range of options, such as for infants with allergies or infants needing more calories for weight gain.

TABLE 3.3 Benefits of Human Milk and Formula (sources: Feldman-Winter et al., 2022; Martin et al., 2016; Fan et al., 2023)

3 This study (Bains & Mittal, 2023) uses the term "Western."

Human Milk	Formula
Convenience: Human milk, when breastfed, is the correct temperature, requires no extra equipment, and can be delivered immediately when nursing parent and baby are together.	Convenience: Anyone can feed the baby, which can distribute the caregiving load. Formula, when bottle fed, can also be delivered without privacy concerns in public settings.
Attachment: Human milk provided by breastfeeding releases oxytocin that promotes bonding.	Attachment: Any primary caregiver can use a bottle- or chestfeeding technique with formula, which can promote bonding for all caregivers.
Maternal health: Breastfeeding has been associated with a reduced risk of breast and ovarian cancers.	Maternal comfort or lifestyle: Formula provides a healthy option for those who cannot or prefer not to breastfeed or provide human milk.

TABLE 3.3 Benefits of Human Milk and Formula (sources: Feldman-Winter et al., 2022; Martin et al., 2016; Fan et al., 2023)

Infant feeding practices also vary around the world. For example, breastfeeding rates tend to be lower in high-income countries (UNICEF & WHO, 2018), which may reflect differences in the way it is viewed and how likely a mother is to return to work while her child is still of breastfeeding age (Gallegos et al., 2020). Many caregivers choose a combination of human milk and formula as well as a combination of breastfeeding and bottle feeding.

Frequency of Feeding

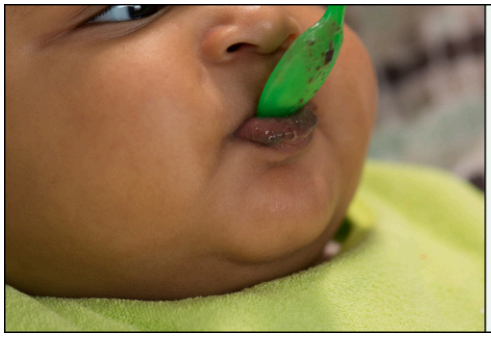
As infants get older, the frequency of their feedings will change. The Dietary Guidelines for Americans and the AAP recommend that infants are only fed human milk and/or formula until six months of age (CDC, 2023a). The stomach of a newborn infant is small and easily filled. As a result, they may eat as often as every one to three hours. Over the first several months, the time between feedings will increase, but feedings may still be needed every two to four hours. By nine to twelve months, when the stomach has increased in size, infants are able to eat more at one time and often need only three feedings a day.

A common recommendation is to follow the infant's hunger cues (sucking noises, open mouth, hands near mouth) and fullness cues (turns head away, spits out, is distracted) (Samour & King, 2005). Such responsive feeding can help develop an infant's sense of trust and security as they learn that their caregivers will provide what they need. Caregivers should feed infants slowly and patiently, encouraging but not forcing them. They can also maintain eye contact while talking to the infant throughout the feeding (WHO, 2023).

Complementary Feeding

The WHO, AAP, and UNICEF also recommend introducing nutritious and safe solid foods at six months of age. However, the addition of solids is considered complementary feeding, because the primary source of nutrition at this stage should still be human milk and/or formula.

The time to start solid foods is based on the infant's ability to sit up, support their head, and push up with straight elbows from a lying-down position (Figure 3.8). Babies will also show interest in food by leaning forward and opening their mouth. Introducing solid food before six months may interfere with the child's getting enough nutrients from milk, though culture does play a role in determining when parents introduce solids. For example, many French mothers introduce solids at around four to five months (Courtois et al., 2021).



Readiness for solids:

- Baby can grasp objects and bring them to mouth
- Baby can hold head steady
- Baby shows an interest in eating by leaning toward food, mouthing, watching others eat
- Baby needs minimal support to sit upright

FIGURE 3.8 These are signs that a baby is ready to start eating solid food. (credit left: modification of work "20210805-FNS-UNC-0003" by U.S. Department of Agriculture/Flickr, Public Domain; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

At six months, infants can be introduced to cereals and pureed fruits and vegetables. To monitor possible allergic reactions to foods, safe foods should be introduced one at a time, for several days each. Even at this age it is important to ensure that an infant's diet contains a balance of macronutrients, with about 50 to 55 percent of daily calories coming from carbohydrates, about 20 percent from proteins, and about 20 to 25 percent from fats (Faizan & Rouster, 2024). A healthy infant should eat about 1,000 calories per day (Patel & Rouster, 2023). The transition from liquid to solid foods is crucial for the development of oral motor skills and oral processing abilities, particularly during the first year of life (Nicklaus et al., 2015).

Infants are ready to progress to finger foods like infant puffs (small snacks that dissolve easily) and dissolvable crackers when they can sit independently, grasp and release food, and chew it (even without teeth) (Kleinman & Greer, 2020). As the child develops more motor skills and socialization, they will be able to eat most of the same foods as the rest of the family and start drinking from a cup and using a spoon.

Factors in Food Preferences

Eating behaviors can vary based on infants' sensory sensitivity, temperament, exposure to different foods, and caregivers' feeding practices. Infants prefer sweet solutions to water at birth; by six months of age, however, this continued preference was associated with dietary exposure to sweet foods (Forestell & Menella, 2017). Therefore, experts recommend offering complementary foods without added sugars and salt. This helps to set a lower threshold for sweet and salty tastes later in life (De Cosmi et al., 2017). Infants are also born with a natural tendency to reject bitter foods, but recent research has shown that adding a small amount of sugar or salt increases the likelihood that infants will accept more novel, slightly bitter foods such as kale (Johnson et al., 2021). Nursing mothers usually eat a variety of foods, which may explain why breastfed children tend to try new foods and become less picky eaters than formula-fed infants (De Cosmi et al., 2017). Regardless of whether an infant is human milk or formula fed, they will also have gained some experience with flavors through tasting the amniotic fluid in the womb (De Cosmi et al., 2017).

Food acceptance is closely related to sensory processing, because foods differ in taste, smell, appearance, texture, and even sound (Blissett & Fogel, 2013). Exposure to a variety of foods during the complementary feeding period is related to greater acceptance of new foods (De Cosmi et al., 2017). Children who are not exposed to a variety of foods may become unwilling to try new tastes. When new foods are introduced within a positive social environment and parents model healthful eating behaviors, children may be more willing to try foods. For example, if parents frequently eat quinoa and carrots, the infant may be more likely to eat quinoa and carrots due to modeling and exposure. It takes six to fifteen exposures to a new food before we can identify a child's preferences and they begin to eat more of it (De Cosmi et al., 2017). Thus, in order to set up lifelong healthy eating patterns, parents should frequently and patiently offer healthy food choices.

Brain Growth and Development

If you're having a bad day, do yourself a favor and search online for "newborn giraffes." You'll be greeted with

funny and adorable footage of baby giraffes awkwardly standing up and trying to take their first steps mere hours after birth. What takes less than a day for a giraffe takes a year for human children, however. Why is this?

Many of our inborn motor skills are reflexes. A **reflex** is an involuntary movement that originates in our brainstem in response to stimulation. Reflexes are important for brain development, and most reflexes will develop into controlled motor skills, like grasping by four months and walking by twelve months. These motor and cognitive changes start with neurons, our body's messengers, and relevant aspects of brain development.

Neural Growth

The brain, a 3-mm neural tube the size of a grain of rice during the embryonic stage, is estimated to have 100 billion neurons at birth (ten Donkelaar et al., 2023). A **neuron** (Figure 3.9), a specialized nerve cell, is the body's messenger and consists of three parts:

- cell body (soma): manages the messaging, keeps neuron functioning
- axon: carries the message away from the cell body, contains terminal buttons at the end to help release the message, and is covered with a fatty white substance called myelin that helps transmit messages faster and more efficiently
- dendrite: receives the message and transmits it to the cell body

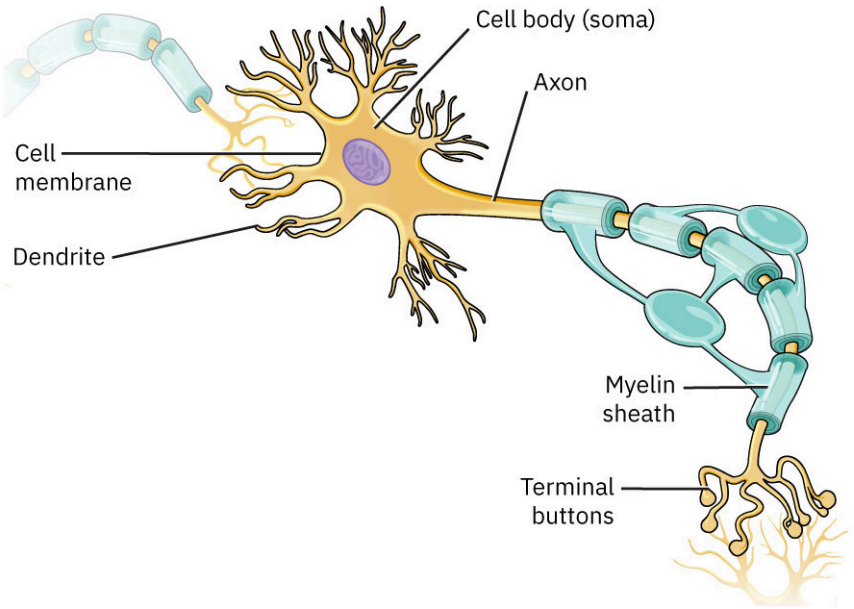


FIGURE 3.9 Each part of the neuron plays a role in communication between the brain and the body. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The development of new neurons, termed **neurogenesis**, begins prenatally. Once neurons have formed, they begin to form connections with existing neurons. Neurons are the only cells in the body that aren't directly connected to each other but instead are separated by a gap or **synapse** (Figure 3.10). Thus, the process of neurons connecting is called **synaptogenesis**. Neurons release neurotransmitters, the chemical messengers of the nervous system, into the synapse from the axon terminal, where dendrites of the next neuron receive them. By age two years, children have approximately 15,000 synapses or neural connections per neuron (Shonkoff & Phillips, 2000). These connections grow stronger if they're used frequently. If not, they die off in a process called **synaptic pruning**. Think of synaptic pruning as the brain's way of removing the clutter of unused synapses. As a result of overproduction of synapses during the first two years, toddlers may have twice as many synapses in their cerebrum/cerebral cortex as adults, so pruning continues into the teen years (Johnston, 2004). Beginning prenatally, **myelination** also occurs, the process by which the axon develops its myelin sheath. Myelination occurs primarily in the first two years of life but is still present throughout the lifespan.

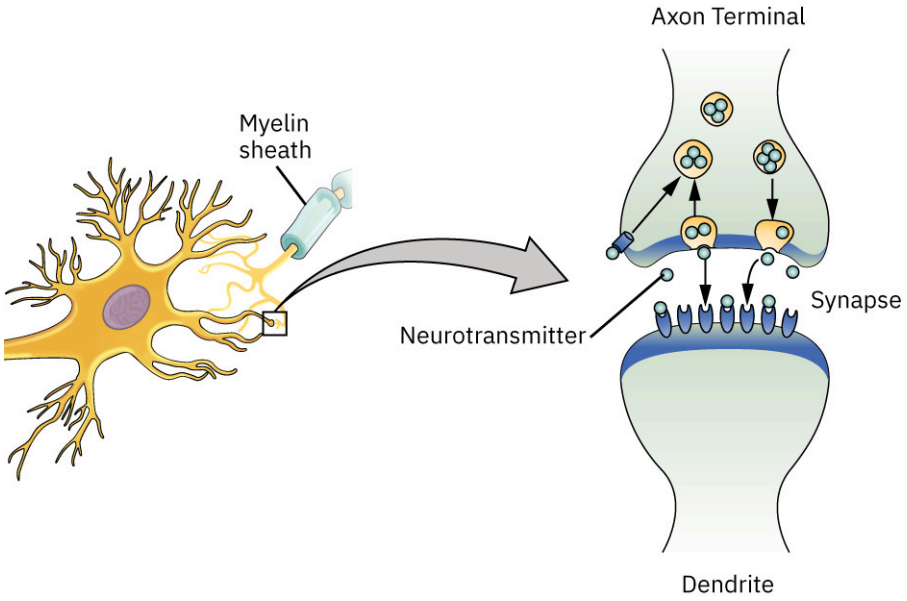


FIGURE 3.10 The gaps between neurons are called synapses. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

By the age of two years, a child's brain structure typically has the appearance of an adult brain (Johnson, 2001). The cerebral cortex/cerebrum is composed of multiple layers of **gray matter**, the outer layer of the brain, made up of the cell bodies of the neurons, particularly in the cerebrum/cerebral cortex and the cerebellum. Gray matter also exists in the brain stem and the cord. The interior is **white matter** that is composed of many bundles of axons that connect neurons to different regions with functional circuits/pathways.

The most rapid increase of white matter in the brain happens during the first two years (Johnson, 2001) as axons become increasingly myelinated. White matter is crucial for the efficient transmission of information throughout the brain and occurs along with cognitive and behavioral development (Stephens et al., 2020). Around age eight months to one year, the white matter associated with the frontal, parietal, and occipital lobes becomes visible on magnetic resonance imaging (Stephens et al., 2020).

LINK TO LEARNING

It is through experiences that neurons form synapses with nearby neurons, a process critical for brain development. How experiences shape the development of a child's brain (https://openstax.org/r/104XpBrain) is described in this video on connections and brain development from Harvard University.

Brain Specialization

The cerebral cortex, also known as the cerebrum, is one of the areas of the brain that controls voluntary behavior and thought (Figure 3.11). It has two hemispheres connected by the corpus callosum, and each hemisphere has four specialized lobes:

- The **frontal lobe** controls thinking, planning, memory, and judgment.
- The **parietal lobe** focuses on processing sensory information such as touch and spatial awareness.
- The **temporal lobe** is associated with hearing and language.
- The **occipital lobe** processes visual information.

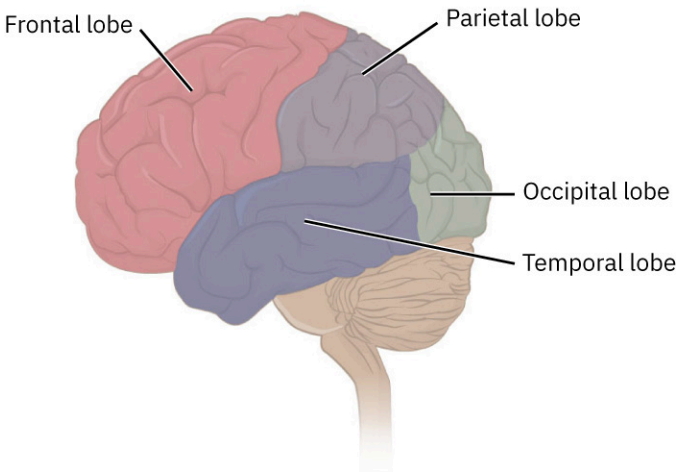


FIGURE 3.11 These are the four lobes in each hemisphere of the cerebral cortex. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The lobes of the brain are further specialized. For example, the **prefrontal cortex**, in the front of the frontal lobe, helps regulate and control emotions as well as planning and judgment, and it continues to develop into early adulthood. The visual cortex, in the back of the occipital lobe, receives sensory input from the eyes and helps us perceive and integrate visual information. For example, this is where you might process color. The frontal lobe and parietal lobe also share responsibility for coordinating muscle movement and sensations such as touch, temperature, and pain via the motor and somatosensory cortices.

Sensitive periods are times in brain development during which certain areas develop more quickly. During sensitive periods, the brain is particularly susceptible to environmental influences. For example, the visual cortex undergoes a growth spurt at age two to four months, and most of the visual areas of the brain are developed by twelve months. If an infant is born with cataracts, their ability to see detail is much better if the cataracts are removed shortly after birth (before the sensitive period) rather than later (Maurer et al., 1999).

The process in which different functions become localized to one of the brain's two hemispheres is called **lateralization**. Typically, the right side of the brain controls the left side of the body, and the other way around. So, our right visual field of view is processed in the left hemisphere and vice versa. Lateralization is influenced by both prenatal and after-birth experiences and governs handedness, language skill, and other traits. With maturation, we typically see language production and perception governed predominantly by the left hemisphere, with the right hemisphere's role decreasing during childhood (Olulade et al., 2020).

Plasticity

The brain's ability to change, physically and chemically, in response to environmental input and to compensate for injury is known as **plasticity**. This remarkable ability comes from the growth of new neurons, as well as the growth and pruning of synapses. Because of the rapid synaptogenesis happening during infancy, the brain is remarkably flexible in response to environmental inputs. This plasticity explains why younger children can often learn the sounds of a new language more quickly than older children or adults. However, plasticity may also make the brain more vulnerable to negative events (DeMaster et al., 2019). For example, infants born preterm are more vulnerable to inflammation and reduced oxygen supplies. But at the same time, plasticity allows the brain to recover more quickly from damage. For example, children who have had brain surgery to resolve severe epileptic seizures need less health-care intervention later (Pan et al., 2021).

When we consider all these developments together, we recognize that important changes in the brain are the result of environmental experiences. However, at the same time, new capabilities due to brain development allow infants and toddlers to explore and experience their environment, creating a feedback loop between the brain and the environment.

Health Risks in Infancy and Toddlerhood

The occurrence of death before age one year, known as **infant mortality**, can be a marker for the overall health of a society (CDC, 2024). In 2020, the U.S. infant mortality rate was 5.4 deaths per 1,000 births, compared to 1.5 in Slovenia, the nation with the world's lowest rate (Central Intelligence Agency [CIA], 2023). However, even within the United States, racial and socioeconomic disparities in infant mortality occur. For example, the rate ranges from as low as 2.3 per 1,000 live births for Chinese American infants to 8.5 for American Indian/Alaska Natives and 11.2 for Black infants (Singh & Yu, 2019). Infant mortality is also higher for those living in high-poverty areas (Singh et al., 2017). These disparities are likely due to risks associated with economic and community inequalities such as reduced access to high-quality health care (Singh & Yu, 2019).

Globally, the leading causes of death in infants, toddlers, and young children are premature birth, respiratory infection, birth trauma, and malaria (Villavicencio et al., 2024). In lower-income countries with higher infant mortality rates, health risks for children aged two years and under include malaria, diarrheal diseases, and pneumonia (Ali & Aziz, 2021; WHO, 2022). Many causes of early childhood death can be prevented through vaccinations, adequate nutrition, and clean drinking water.

Vaccine-Preventable Diseases

Infants and toddlers are at risk for several vaccine-preventable diseases during the first two years of life (Table 3.4). The Centers for Disease Control and Prevention (CDC) recommend the vaccines U.S. children should receive, when they should receive them, and the time between doses (if applicable). All these vaccines have been tested and are provided for the safety and healthy development of the infant. Following the recommended schedule protects against the risk of serious illness and complications.

Vaccine	Preventable Disease(s)
Hepatitis B	Infants can contract hepatitis B from infected mothers during the birth process or through exposure to infected bodily fluids. The hepatitis B vaccine is recommended for all infants and is typically given within the first twenty-four hours after birth.
Rotavirus	Rotavirus is a common cause of diarrhea and vomiting in infants and young children. The rotavirus vaccine is recommended for all infants and is typically given in a series of two or three doses, depending on the vaccine used.
Diphtheria, tetanus, and pertussis (DTaP)	These bacterial infections can cause serious illness in infants and young children. The DTaP vaccine, which protects against all three, is recommended for all infants and is typically given in a series of five doses.
Polio	Polio is a viral infection that can cause paralysis and death. The polio vaccine is recommended for all infants and is typically given in a series of four doses.
Haemophilus influenzae type B (Hib)	This bacterial infection can cause serious illnesses such as meningitis and pneumonia in infants and young children. The Hib vaccine is recommended for all infants and is typically given in a series of three or four doses.
Pneumococcal disease	This bacterial infection can cause a range of illnesses, including pneumonia, meningitis, and ear infections. The pneumococcal vaccine is recommended for all infants and is typically given in a series of four doses.

TABLE 3.4 Vaccine-Preventable Diseases (source: CDC, 2023b)

Vaccine	Preventable Disease(s)
Measles-mumps-rubella (MMR)	These are three infections that can cause serious illness or even death in infants and young children. The MMR vaccine protects against all three illnesses and is given in two doses (at twelve to fifteen months and again at four to six years of age).
Varicella	The varicella vaccine prevents chicken pox and is administered in two doses (at twelve to fifteen months and again at four to six years of age).

TABLE 3.4 Vaccine-Preventable Diseases (source: CDC, 2023b)

Malnutrition

Malnutrition, a lack of healthy nutrition, includes **undernutrition**, a condition in which calories and nutrients are missing, is responsible for 45 percent of all child deaths worldwide (WHO, 2022). Even without mortality, undernutrition is a serious health risk for infants and young children. Severe malnutrition reduces the number of neurons and synapses, dendrite growth, and myelination (Georgieff, 2007; Prado & Dewey, 2014).

Children in developing and war-torn countries are at risk for undernutrition. Starvation due to lack of calories and protein is **marasmus**, while **kwashiorkor** typically occurs after weaning in children whose diets have insufficient protein. Children then experience a loss of appetite and swelling of the abdomen as the body breaks down organs as a source of protein. Untreated, both marasmus and kwashiorkor can irreversibly delay physical and neurological development, leading to stunted growth, impaired cognition, and death (Alou et al., 2021; Bunker & Pandey, 2021).

Diarrheal disease, typically the result of an infection in the intestinal tract spread through contaminated food or water or poor hygiene, can also lead to malnutrition. It is the third leading cause of death in young children (WHO, 2024) because it can quickly lead to severe dehydration when access to health care is limited. Public health prevention and intervention programs implemented during pregnancy and for children under age two years can reduce risks for malnutrition and diarrheal disease (Rueda-Guevara et al., 2021).

Finally, malnutrition can involve overnutrition that is the result of eating too many nutrients. This can lead to overweight or obesity, an increasing problem in middle- and high-income countries that was exacerbated by increased food insecurity during the COVID-19 pandemic (Zemrani et al., 2021). It is associated with both short- and long-term health consequences, including cardiovascular disease, diabetes, and metabolic and endocrine disorders (Calcaterra & Zuccotti, 2022).

LINK TO LEARNING

Proper nutrition is critical for optimal development during childhood, but often children in poverty have limited access to high-quality nutrition. The UNICEF website provides information about the impact of poverty on malnutrition among children (https://openstax.org/r/104Malnutrition) across the world.

References

Acevedo, N., Alashkar Alhamwe, B., Caraballo, L., Ding, M., Ferrante, A., Garn, H., Garssen, J., Hii, C. S., Irvine, J., Llinás-Caballero, K., López, J. F., Miethe, S., Perveen, K., Pogge von Strandmann, E., Sokolowska, M., Potaczek, D. P., & van Esch, B. C. (2021). Perinatal and early-life nutrition, epigenetics, and allergy. *Nutrients*, *13*(3), 724. https://doi.org/10.3390/nu13030724

Ali, H., & Aziz, S. (2021). Rising pediatric morbidity and mortality in the developing world. *Cureus*, *13*(4), Article e14728. https://doi.org/10.7759/cureus.14728

Austin, J. E., Nashban, C. J., Doering, J. J., & Davies, W. H. (2017). Prevention messages in parent-infant bed-sharing: Message source, credibility, and effectiveness. *Global Pediatric Health*, *4*. https://doi.org/10.1177/2333794X17743403

Bains, R. & Mittal, R. (2023). Does co-sleeping cause sudden infant death? [Supplemental material]. *Archives of Disease in Childhood, 108*, Article A62. https://doi.org/10.1136/archdischild-2023-rcpch.104

Barry, E. S. (2017). Why rates of bedsharing with infants are rising, while U.S. health policy advocates condemn it. *NCFR Report*, *62*(2), F15–F17.

Barry, E. S. (2020). What is "normal" infant sleep? Why we still do not know. *Psychological Reports,124*(2), 651–692. https://doi.org/10.1177/0033294120909447

Bartick, M., Stehel, E. K., Calhoun, S. L., Feldman-Winter, L., Zimmerman, D., Noble, L., Rosen-Carole, C., & Kair, L. R. (2021). Academy of Breastfeeding Medicine position statement and guideline: Infant feeding and lactation-related language and gender. *Breastfeeding Medicine*, *16*(8), 587–590. https://doi.org/10.1089/bfm.2021.29188.abm

Blissett, J., & Fogel, A. (2013). Intrinsic and extrinsic influences on children's acceptance of new foods. *Physiology & behavior*, *121*, 89–95. https://doi.org/10.1016/j.physbeh.2013.02.013

Bunker, S., & Pandey, J. (2021). Educational Case: Understanding kwashiorkor and marasmus: Disease mechanisms and pathologic consequences. *Academic Pathology*, *8*, Article 23742895211037027. https://doi.org/10.1177/23742895211037027
Calcaterra, V., & Zuccotti, G. (2022). Metabolic, endocrine, and cardiovascular risks in children with overnutrition and undernutrition. *Children, 9*(7), 926. https://doi.org/10.3390/children9070926
Centers for Disease Control and Prevention. (2010, September 9). *WHO growth standards are recommended for use in the U.S. for infants and children 0 to 2 years of age*. U.S. Department of Health and Human Services, National Center for Health Statistics. https://www.cdc.gov/growthcharts/who_charts.htm
Centers for Disease Control and Prevention. (2023a, March 17). *Recommendations and Benefits*. U.S. Department of Health and Human Services. https://www.cdc.gov/nutrition/InfantandToddlerNutrition/breastfeeding/recommendations-benefits.html
Centers for Disease Control and Prevention. (2023b, December 7). *Vaccines & immunizations*. U.S. Department of Health and Human Services. https://www.cdc.gov/vaccines/
Centers for Disease Control and Prevention. (2024, May 15). *Infant Mortality*. U.S. Department of Health and Human Services. https://www.cdc.gov/maternal-infant-health/infant-mortality/index.html
Central Intelligence Agency. (2023, January 5). *The World Factbook*. https://www.cia.gov/the-world-factbook/
Courtois, F., Péneau, S., Salanave, B., Andreeva, V. A., Roland-Cachera, M. F., Touvier, M., Galan, P., Hercberg, S., & Fezeu, L. K. (2021). Trends in breastfeeding practices and mothers' experience in the French NutriNet-Santé cohort. *International Breastfeeding Journal, 16*(1), Article 50. https://doi.org/10.1186/s13006-021-00397-x
De Cosmi, V., Scaglioni, S., & Agostoni, C. (2017). Early taste experiences and later food choices. *Nutrients, 9*(2), Article 107. https://doi.org/10.3390/nu9020107
DeMaster, D., Bick, J., Johnson, U., Montroy, J., Landry, S., & Duncan, A. (2019). Nurturing the preterm infant brain: leveraging neuroplasticity to improve neurobehavioral outcomes. *Pediatric Research 85*(2), 166–175. https://doi.org/10.1038/s41390-018-0203-9
Faizan, U., & Rouster, A. S. (2024). *Nutrition and hydration requirements in children and adults*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK562207/
Fan, D., Xia, Q., Lin, D., Ma, Y., Rao, J., Liu, L., Tang, H., Xu, T., Li, P., Chen, G., Zhou, Z., Guo, X., Zhang, Z., & Liu, Z. (2023). Role of breastfeeding on maternal and childhood cancers: An umbrella review of meta-analyses. *Journal of Global Health, 13*, Article 04067. https://doi.org/10.7189/jogh.13.04067
Feldman-Winter, Van, T., Varadi, D., Adams, A. C., Kural, B., & Rouw, E. C. J. (2022). Academy of breastfeeding medicine position statement: Breastfeeding as a basic human right [White paper]. *Breastfeeding Medicine, 17*(8), 633–634. https://doi.org/10.1089/bfm.2022.29216.abm
Forestell, C. A., & Mennella, J. A. (2017). The relationship between infant facial expressions and food acceptance. *Current Nutrition Reports, 6*(2), 141–147. https://doi.org/10.1007%2Fs13668-017-0205-y
Gale, C. R., O'Callaghan, F. J., Bredow, M., Martyn, C. N., & Avon Longitudinal Study of Parents and Children Study Team. (2006). The influence of head growth in fetal life, infancy, and childhood on intelligence at the ages of 4 and 8 years. *Pediatrics, 118*(4), 1486–1492.
Gallegos, D., Parkinson, J., Duane, S., Domegan, C., Jansen, E., & Russell-Bennett, R. (2020). Understanding breastfeeding behaviours: A cross-sectional analysis of associated factors in Ireland, the United Kingdom and Australia. *International Breastfeeding Journal, 15*, Article 103. https://doi.org/10.1186/s13006-020-00344-2
Georgieff, M. K. (2007). Nutrition and the developing brain: Nutrient priorities and measurement. *The American Journal of Clinical Nutrition*, *85*(2), 614S–620S. https://doi.org/10.1093/ajcn/85.2.614S
Getaneh, T., Negesse, A., Dessie, G., Desta, M., Assemie, M. A., & Tigabu, A. (2021). Predictors of malnutrition among pregnant women in Ethiopia: A systematic review and meta-analysis. *Human Nutrition & Metabolism*, *26*, Article 200131. https://doi.org/10.1016/j.hnm.2021.200131
Giannotti, F., & Cortesi, F. (2009). Family and cultural influences on sleep development. *Child and Adolescent Psychiatric Clinics of North America*, *18*(4), 849–861. https://doi.org/10.1016/j.chc.2009.04.003
Goodwin, E. T., Buel, K. L., & Cantrell, L. D. (2023). Growth faltering and failure to thrive in children. *American Family Physician*, *107*(6), 597–603.
Graber, E. G. (2023). Physical growth of infants and children. *MSD Manual Professional Version*. https://www.msdmanuals.com/professional/pediatrics/growth-and-development/physical-growth-of-infants-and-children
Huang, X.-N., Wang, H.-S., Zhang, L.-J., & Liu, X.-C. (2010). Co-sleeping and children's sleep in China. *Biological Rhythm Research*, *41*(3), 169–181. https://doi.org/10.1080/09291011003687940
Hussein, S.M., Ibrahim, M.H. & Saeed, I.M. (2023). Failure to thrive in children under three years of age and associated factors, cross-sectional research study. *Journal of Population Therapeutics and Clinical Pharmacology, 30*(15), 180–188. https://doi.org/10.47750/jptcp.2023.30.15.02
Jenkins, C. L., Orr-Ewing, A. K., & Heywood, P. F. (1984). Cultural aspects of early childhood growth and nutrition among the Amele of Lowland Papua New Guinea. *Ecology of food and nutrition*, *14*(4), 261–275. https://doi.org/10.1080/03670244.1984.9990795
Johnson, M.H. (2001). Functional brain development in humans. *Nature Reviews Neuroscience, 2,* 475–483. https://doi.org/10.1038/35081509
Johnson, S. L., Moding, K. J., Grimm, K. J., Flesher, A. E., Bakke, A. J., & Hayes, J. E. (2021). Infant and toddler responses to bitter-tasting novel vegetables: Findings from the Good Tastes Study. *The Journal of Nutrition, 151*(10), 3240–3252. https://doi.org/10.1093/jn/nxab198
Johnston, M. V. (2004). Clinical disorders of brain plasticity. *Brain & Development, 26*(2), 73–80. https://doi.org/10.1016/S0387-7604(03)00102-5
Joseph, D., Chong, N. W., Shanks, M. E., Rosato, E., Taub, N. A., Petersen, S. A., Symonds, M. E., Whitehouse, W. P., & Wailoo, M. (2015). Getting rhythm: How do babies do it? *Archives of Disease in Childhood - Fetal and Neonatal Edition, 100*(1), F50–4. https://doi.org/10.1136/archdischild-2014-306104
Kim, H., & Pearson-Shaver, A. L. (2023, July 24). *Sudden infant death syndrome*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK560807/
Kleinman, R. E., & Greer, F. R. (Eds.). (2020). *Pediatric nutrition*, (8th ed., p. 163). American Academy of Pediatrics. https://doi.org/10.1542/9781610023610
Koemel, N. A., & Skilton, M. R. (2022). Epigenetic aging in early life: role of maternal and early childhood nutrition. *Current Nutrition Reports*, *11*, 318–328. https://doi.org/10.1007/s13668-022-00402-7
Liu, J., Sun, Y., Fan, X., Zang, T., Han, L., Slack, J. E., Bai, J., Chen, H., & Liu, Y. (2023). Effects of psychosocial sleep interventions on improving infant sleep and maternal sleep and mood: A systematic review and meta-analysis. *Sleep Health, 9*(5), 662–671. https://doi.org/10.1016/j.sleh.2023.06.010
Marete, I., Ekhaguere, O., Bann, C. M., Bucher, S. L., Nyongesa, P., Patel, A. B., Hibberd, P. L., Saleem, S., Goldenberg, R. L., Goudar, S. S., Derman, R. J., Garces, A. L., Krebs, N. F., Chomba, E., Carlo, W. A., Lokangaka, A., Bauserman, M., Koso-Thomas, M., Moore, J. L., McClure, E. M., & Esamai, F. (2020). Regional trends in birth weight in low- and middle-income countries 2013–2018 [Supplemental material]. *Reproductive Health, 17*, Article 176. https://doi.org/10.1186/s12978-020-01026-2
Martin, C. R., Ling, P. R., & Blackburn, G. L. (2016). Review of infant feeding: Key features of breast milk and infant formula. *Nutrients*, *8*(5), Article 279. https://doi.org/10.3390/nu8050279
Maurer, D., Lewis, T. L., Brent, H. P., & Levin, A. V. (1999). Rapid improvement in the acuity of infants after visual input. *Science, 286*, 108–110. https://maurer.ca/dpubs/MaurerImmedOutcome.pdf
Meek, J. Y., Feldman-Winter, L., & Noble, L. (2020). Optimal duration of breastfeeding. *Pediatrics*, *46*(5), Article e2020021063. https://doi.org/10.1542/peds.2020-021063
Michigan Department of Health and Human Services. (n.d.). *Why don't babies choke when they are on their back?* State of Michigan. https://www.michigan.gov/mdhhs/safety-injury-prev/safe-sleep2/safe-sleep-for-your-baby/accordion/keep-your-baby-sleeping-safely/learn-why-babies-wont-choke-when-sleeping-on-their-backs
Mireku, M. O., & Rodriguez, A. (2021). Sleep duration and waking activities in relation to the National Sleep Foundation's recommendations: An analysis of US population sleep patterns from 2015 to 2017. *International Journal of Environmental Research and Public Health, 18*(11), Article 6154. https://doi.org/10.3390/ijerph18116154
Moon, R. Y., Carlin, R. F., Hand, I., & Task Force on Sudden Infant Death Syndrome. (2022). Sleep-related infant deaths: Updated 2022 recommendations for reducing infant deaths in the sleep environment. *Pediatrics*, *150*(1), Article e2022057990. https://doi.org/10.1542/peds.2022-057990
Moon, R. Y., Mindell, J. A., Honaker, S., Keim, S., Roberts, K. J., McAdams, R. J., & McKenzie, L. B. (2024). The tension between AAP safe sleep guidelines and infant sleep. *Pediatrics, 153*(4), Article 32023064675. https://doi.org/10.1542/peds.2023-064675
Moon, R. Y., & Task Force on Sudden Infant Death Syndrome. (2011). SIDS and other sleep-related infant deaths: Expansion of recommendations for a safe infant sleeping environment. *Pediatrics*, *128*(5), 1030–1039. https://doi.org/10.1542/peds.2011-2284
Muglia, L. J., Benhalima, K., Tong, S., & Ozanne, S. (2022). Maternal factors during pregnancy influencing maternal, fetal, and childhood outcomes. *BMC Medicine*, *20*(1), Article 418. https://doi.org/10.1186/s12916-022-02632-6
Nicklaus, S., Demonteil, L., & Tournier, C. (2015). Modifying the texture of foods for infants and young children. In Chen, J., & Rosenthal, A (Eds.), *Modifying food texture volume 2: sensory analysis, consumer requirements and preferences* (pp. 187–222). Woodhead Publishing. https://doi.org/10.1016/B978-1-78242-334-8.00008-0
Oh, J., Ordoñez, E. L. T., Velasquez, E., Mejía, M., Grazioso, M. D. P., Rohloff, P., & Smith, B. (2024). Early full-day leg movement kinematics and swaddling patterns in infants in rural Guatemala: A pilot study. *PloS ONE, 19*(2), Article e0298652. https://doi.org/10.1371/journal.pone.0298652
Ohmura, N., Okuma, L., Truzzi, A., Shinozuka, K., Saito, A., Yokota, S., Bizzego, A., Miyazawa, E., Shimizu, M., Esposito, G., & Kuroda, K. O. (2022). A method to soothe and promote sleep in crying infants utilizing the transport response. *Current Biology*, *32*(20), 4521–4529. https://doi.org/10.1016/j.cub.2022.08.041
Olulade, O. A., Seydell-Greenwald, A., Chambers, C. E., Turkeltaub, P. E., Dromerick, A. W., Berl, M. M., Gaillard, W. D., & Newport, E. L. (2020). The neural basis of language development: Changes in lateralization over age. *PNAS, 117*(38), 23477–23483. https://doi.org/10.1073/pnas.1905590117
Osterman, M. J. K., Hamilton, B. E., Joyce A. Martin, J. A., Driscoll, A. K., & Valenzuela, C. P. (2024). Births: Final Data for 2022. *National Vital Statistics Reports*, *73*(2). https://dx.doi.org/10.15620/cdc:145588

Paavonen, E. J., Saarenpää-Heikkilä, O., Morales-Munoz, I., Virta, M., Häkälä, N., Pölkki, P., Kylliäinen, A., Karlsson, H., Paunio, T., & Karlsson, L. (2020). Normal sleep development in infants: findings from two large birth cohorts. *Sleep medicine*, *69*, 145–154. https://doi.org/10.1016/j.sleep.2020.01.009
Pan, I., LoPresti, M. A., Clarke, D. F., & Lam, S. (2021). The effectiveness of medical and surgical treatment for children with refractory epilepsy. *Neurosurgery*, *88*(1), E73–E82. https://doi.org/10.1093/neuros/nyaa307
Pham, T.-P.-T., Alou, M. T., Golden, M. H., Million, M., & Raoult, D. (2021). Difference between kwashiorkor and marasmus: Comparative meta-analysis of pathogenic characteristics and implications for treatment. *Microbial pathogenesis*, *150*, Article 104702. https://doi.org/10.1016/j.micpath.2020.104702
Prado, E. L., & Dewey, K. G. (2014). Nutrition and brain development in early life. *Nutrition Reviews*, *72*(4), 267–284. https://doi.org/10.1111/nure.12102
Reuter, A., Silfverdal, S.-A., Lindblom, K., & Hjern, A. (2020). A systematic review of prevention and treatment of infant behavioural sleep problems. *Acta paediatrica*, *109*(9), 1717–1732. https://doi.org/10.1111/apa.15182
Rueda-Guevara, P., Botero-Tovar, N., Trujillo, K. M., & Ramírez, A. (2021). Worldwide evidence about infant stunting from a public health perspective: A systematic review. *Biomedica*, *41*(3), 6017–6554. https://doi.org/10.7705%2Fbiomedica.6017
Salm Ward, T. C. (2015). Reasons for mother-infant bed-sharing: A systematic narrative synthesis of the literature and implications for future research. *Maternal and Child Health Journal*, *19*(3), 675–690. https://doi.org/10.1007/s10995-014-1557-1
Samour, P. Q., Samour, P. K., & Helm, K. K. (2005). *Handbook of pediatric nutrition* (3rd ed.). Jones & Bartlett Learning.
Shapiro-Mendoza, C. K., Woodworth, K. R., Cottengim, C. R., Lambert, A. B. E., Harvey, E. M., Monsour, M., Parks, S. E., & Barfield, W. D. (2023). Sudden unexpected infant deaths: 2015–2020. *Pediatrics*, *151*(4), Article e2022058820. https://doi.org/10.1542/peds.2022-058820
Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. National Academies' Press. http://www.nap.edu/catalog/9824.html
Sidebotham, P., Bates, F., Ellis, C., & Lyus, L. (2018). Preventive strategies for sudden infant death syndrome. In Duncan, J. R., & Byard, R. W (Eds.), *SIDS sudden infant and early childhood death: The past, the present and the future* (pp. 217–256). University of Adelaide Press. https://www.ncbi.nlm.nih.gov/books/NBK513384/pdf/Bookshelf_NBK513384.pdf
Singh, G. K., Kogan, M. D., & Slifkin, R. T. (2017). Widening disparities in infant mortality and life expectancy between Appalachia and the rest of the United States, 1990–2013. *Health Affairs, 36*(8), 1423–1432. https://doi.org/10.1377/hlthaff.2016.1571
Singh, G. K., & Yu, S. M. (2019). Infant mortality in the United States, 1915-2017: Large social inequalities have persisted for over a century. *International journal of Maternal and Child Health and AIDS*, *8*(1), 19–31. https://doi.org/10.21106/ijma.271
Stephens, R. L., Langworthy, B. W., Short, S. J., Girault, J. B., Styner, M. A., & Gilmore, J. H. (2020). White matter development from birth to 6 years of age: A longitudinal study. *Cerebral Cortex*, *30*(12), 6152–6168. https://doi.org/10.1093/cercor/bhaa170
ten Donkelaar, H. J., Takakuwa, T., Vasung, L., Yamada, S., Shiota, K., & van der Vliet, T. (2023). Overview of the development of the human brain and spinal cord. In ten Donkelaar, H. J., Lammens, M., & Hori A (Eds.), *Clinical neuroembryology: development and developmental disorders of the human central nervous system* (pp. 1-76). Springer International Publishing. https://doi.org/10.1007/978-3-031-26098-8_1
United Nations Children's Fund, & World Health Organization. (2018). *Breastfeeding: A mother's gift, for every child* [White paper]. United Nations Children's Fund (UNICEF). https://coilink.org/20.500.12592/pzgmtsj
Villavicencio, F., Perin, J., Eilerts-Spinelli, H., Yeung, D., Prieto-Merino, D., Hug, L., Sharrow, D., You, D., Strong, K. L., Black, R. E., & Liu, L. (2024). Global, regional, and national causes of death in children and adolescents younger than 20 years: An open data portal with estimates for 2000–21. *The Lancet Global Health*, *12*(1), e16–e17. https://doi.org/ 10.1016/S2214-109X(23)00496-5
Vizzari, G., Morniroli, D., Tiraferri, V., Macchi, M., Gangi, S., Consales, A., Ceroni, F., Cerasani, J., Mosca, F., & Gianni, M. L. (2023). Postnatal growth of small for gestational age late preterm infants: determinants of catch-up growth. *Pediatric research*, *94*(1), 365–370. https://doi.org/10.1038/s41390-022-02402-3
World Health Organization. (2022, January 28). *Child mortality (under 5 years)*. https://www.who.int/news-room/fact-sheets/detail/levels-and-trends-in-child-under-5-mortality-in-2020
World Health Organization. (2023, December 20). *Infant and young child feeding*. https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding
World Health Organization. (2024, March 7). *Diarrhoeal disease*. https://www.who.int/news-room/fact-sheets/diarrhoeal-disease
Yang, Y. T., Zou, J. J., Wei, Q., Shi, Y. Y., Zhang, Y. H., & Shi, H. J. (2022). A Longitudinal Study of the Effects of Bed-Sharing Experience in Infancy on Sleep Outcomes at 2 Years Old. *The Journal of pediatrics*, *245*, 142–148.e2. https://doi.org/10.1016/j.jpeds.2022.01.045
Zemrani, B., Gehri, M., Masserey, E., Knob, C., & Pellaton, R. (2021). A hidden side of the COVID-19 pandemic in children: The double burden of undernutrition and overnutrition. *International journal for equity in health*, *20*(1), Article 44. https://doi.org/10.1186/s12939-021-01390-w

3.2 Motor Development in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe infants' reflexes
- Identify the typical milestones of motor development
- Distinguish between gross and fine motor development
- Explain influences on motor development in infancy and toddlerhood

Mateo and Jonas brought their eight-month-old daughter Bella to her pediatrician. Bella has been sitting independently for a couple of months and tries to pull herself up to a standing position, but she shows no interest in crawling. The pediatrician says there is no reason for concern. There are many important milestones in physical development, she says, but crawling is not one of them. This is quite surprising news to both dads. In fact, some babies never crawl: they go straight from sitting to walking. Others scoot on their bottoms, "commando" crawl on their bellies, or adopt a "crab crawl," placing their weight on one leg while bending the other to propel themselves forward. The pediatrician says that not crawling will not prevent Bella from reaching other important physical milestones like standing and walking.

The first two years of life bring dramatic gains in the development of movement and motor skills. A newborn's involuntary movements transform to the infant's ability to exert some limited control over their muscles. Suddenly, that infant is a two-year-old child who loves running, jumping, and climbing.

Newborn Reflexes

Babies are born with several reflexes (Table 3.5). Some, like coughing, sneezing, and blinking, stay with us, while others, like rooting, disappear.

Reflex	Description	Average Age at Which Reflex Disappears
Stepping	Makes stepping motion when sole of feet touches hard surface	2 months
Moro	Arms fling sideways with palms up as if in falling motion	2–4 months
Rooting	Turns head to side, opens mouth wide, and makes sucking motions when stroked on cheek	3–4 months
Palmar grasp	Grasps a finger placed in palm	3–6 months
Swimming	Kicks and makes swimming motions if placed face-down in water	4–6 months
Sucking	Sucks when something is in mouth	4 months
Tonic neck	Assumes fencer stance when relaxed and lying face up if someone turns head to side	6 months
Plantar	Curls toes in when finger is placed below them	9–12 months
Babinski	Toes fan out when foot is stroked	12 months
Blinking	Blinks when eyes touch something or are exposed to sudden brightness	Stays
Coughing	Coughs when airway is stimulated	Stays
Gagging	Gags when back of mouth/throat is stimulated	Stays
Sneezing	Sneezes when nasal passage stimulated	Stays

TABLE 3.5 Newborn Reflexes (source: Heidenreich, 2021)

Why do newborns have reflexes? Some, such as the sucking reflex for nursing or bottle feeding, are for survival. Others are a stress response connected to the sympathetic nervous system. For example, the Moro reflex, also called the startle reflex, is activated when the infant is startled by a sudden movement or noise. The head automatically moves back, and the arms and legs flail out. Other reflexes do not have clear functions but are appealing to see, like the Babinski and plantar reflexes. If you glide your finger on the inner sole of the infant's foot beneath their toes, the toes curl up, but if you stroke the outer sole, the toes spread out (Figure 3.12).

FIGURE 3.12 Newborn reflexes include (a) the Moro reflex, similar to a falling response; (b) the palmar reflex when infants grasp an object in their palm; (c) the rooting reflex; and (4) the tonic reflex. (credit a: modification of work "Moro reflex" by "Patty 2"/Wikimedia Commons, Public Domain; credit b: modification of work "Baby" by "NappyStock"/nappy, Public Domain; credit c: "Alden" by Diana Riser/Flickr, CC BY 4.0; credit d: modification of work "Asymmetrical tonic neck reflex (ATNR) at Two Months" by "Mjlissner"/Wikimedia Commons, CC0 1.0)

Some reflexes may be absent in newborns who have neurological impairments or who were born preterm, for example, while others may remain beyond the typical age of disappearance. Health-care professionals are likely to check for the appearance and disappearance of various reflexes to better understand how infants are developing and provide early intervention when needed (Swapna et al., 2020). This scan often begins with the Apgar test immediately after birth.

Milestones in Motor Development

Motor development milestones in the first two years of life are rapid and dramatic, and parents and caregivers often eagerly anticipate their child's learning to sit, stand, and walk. Each achievement occurs during a given time span. The average age for walking is twelve months, for example, but infants can begin to walk as early as eight months or as late as seventeen to eighteen months. These milestones follow the predictable sequence of cephalocaudal and proximodistal development. For example, following the cephalocaudal pattern, infants are first able to hold their heads up, then sit, pull up, and finally walk. In the proximodistal pattern, infants can grab an object with their full hand before they can manipulate it with individual fingers.

Gross Motor Skills

Voluntary movements that rely on large muscle groups and typically activate the arms, legs, head, and torso

are **gross motor skills**. Infants reach several major postural milestones in the first year (Table 3.6). Movement skills also typically build on one another. For example, after crawling, infants may pull themselves up and then gain the strength to walk. If a child is lagging on one or more milestones, the delay can be addressed through early intervention and monitored by a pediatrician. However, motor milestones also show cultural, experiential, and individual variability (Adolph & Hoch, 2019).

Muscle Control Milestone	Age Range Expected
Supports head	6–8 weeks old
Lifts head and chest when on tummy	2–5 months
Rolls from tummy to back	4–6 months
Sits alone (unsupported)	4–8 months
Stands with support	5–12 months
Stands without support	7–17 months
Walks with support	6–13 months
Walks without support	8–17 months

TABLE 3.6 Average Age Range for Muscle Control Milestones in the First Two Years (sources: Adolph & Franchak, 2017; Noritz et al., 2013; WHO Multicentre Growth Reference Study Group & de Onis, 2006)

LINK TO LEARNING

During the first few months of life, infants are rapidly moving from one gross motor milestone to the next. This video shows some of the motor milestones they reach (https://openstax.org/r/104MotorMiles) during the first three months.

Fine Motor Skills

Although gross motor skills typically appear first, infants and toddlers are also beginning to develop **fine motor skills**, coordinated movements performed by small muscles to manipulate and control objects or perform precise tasks like reaching for and grasping an object (Table 3.7). Finger movements readily come to mind, but the toes, eyes, face, tongue, and lips also execute fine motor movements.

Fine Motor Skill Milestone	Average Age Expected
Opens hands briefly	2 months
Holds a toy when put in their hand	4 months
Brings hand to mouth	4 months

TABLE 3.7 Average Age for Fine Motor Skills Emerging in the First Two Years of Life (source: CDC, 2024)

Fine Motor Skill Milestone	Average Age Expected
Reaches to grab toy	6 months
Bangs objects together	9 months
Transfers objects between hands	9 months
Grasps with two fingers	12 months
Feeds self with fingers	18 months
Tries to use buttons or switches on a toy	24 months

TABLE 3.7 Average Age for Fine Motor Skills Emerging in the First Two Years of Life (source: CDC, 2024)

Like gross motor skills, fine motor skills often develop in a predictable sequence. At about four months of age, the infant uses two hands to reach for an object and then with more experience uses only one arm. Grasping begins with hands and palms (no thumb), a skill called the ulnar grasp. At about six months, the palmar grasp reflex is replaced by voluntary grasping. Infants begin to use their thumbs at around nine months of age when they grasp with their forefinger and thumb (Figure 3.13), dramatically improving the ability to control and manipulate objects. These coordinated actions are quite an accomplishment in only a few months' time.

FIGURE 3.13 One indicator that an infant may be ready for solid food is the ability to pick it up with their fingers for self-feeding. This usually happens by twelve months. (credit: modification of work "20210805-FNS-UNC-0024" by U.S. Department of Agriculture/Flickr, Public domain)

The development of fine motor skills improves with practice, as you can observe if you watch an infant pick up objects and put them into a container repeatedly. With practice, infants will change their grasping patterns to fit the shape and size of the objects (Barrett et al., 2008). Fine motor skills, much like gross motor skills, also show variability based on family environment, culture, and opportunities to practice various movements (Hoch et al., 2024). For example, being in a home with more access to toys that call upon fine motor skills predicts improved fine motor skills.

Motor skills are also the result of interactions with other domains of development. For example, infants must plan and use their senses to move about in their environment. The ability to speak is also dependent on their being able to control the muscles in their mouth and larynx. In addition, although motor skills may appear to develop as individual skills, they build on each other, with each new one serving as the foundation for the next. As infants get older, individual motor skills combine into more complex skills, allowing infants to explore and

learn about their surroundings.

LINK TO LEARNING

The development of fine motor skills during infancy (https://openstax.org/r/104FineMotor) allows infants to feed themselves and explore their environment. Many of these skills are learned through play.

Motor Development as a Dynamic System

One theory that has helped developmental psychologists understand the complexities of motor development is **dynamic systems theory**, which posits that developmental behaviors and milestones are the result of interactions between systems, including those within the individual. According to the original theorist, Esther Thelen, motor development is the result of interactions between internal developmental domains (e.g., cognition and the senses), maturation, and the environment (Fujihira & Taga, 2023; Thelen & Smith, 2007). For example, to walk, a child must have several coordinated and developed internal systems including balance, leg muscles, stepping movements, coordination, vision, and spatial awareness (Thelen & Ulrich, 1991).

From a dynamic systems perspective, every motor skill results from multiple maturational and environmental processes. For example, growth in the cerebellum, which contributes to balance and coordination, myelination of the nervous system, and synaptic pruning are critical for acquiring both fine and gross motor skills (Morizawa et al., 2022; Tiemeier et al., 2010). Gross motor skills are also influenced by genetics. Identical twins, who have nearly identical genetic makeup, are more similar in the timing of their motor milestones than fraternal twins, who share around half of the same genes (Ooki, 2006). However, even identical twins have unique experiences that can result in very different motor skill capabilities, as developmental psychologist and neurobiologist Myrtle McGraw observed in case study experiments in the 1930s (McGraw, 1935; Parnin, 2022).

Dynamic systems theory has since expanded into a dynamic systems approach, applying the theory to other domains of development over the lifespan, including cognition and language (Fogel, 2011; Spencer et al., 2011). You may notice that this approach incorporates many of the theories you learned about in Chapter 1 Lifespan Psychology and Developmental Theories, such as cognitive development and behavioral genetics.

LINK TO LEARNING

Review this video to observe some of the original footage of Myrtle McGraw's twin study (https://openstax.org/r/104MyrleMcGraw) of motor development.

Experience and Motor Development

While the dynamic systems approach improves our understanding of the influences of systems within the individual, ecological systems and sociocultural theories inform our view of the factors *outside* the individual that shape developmental outcomes. These can come from cultural and familial environments as well as from individual play behaviors and resources.

Although the sequence of motor milestones is expected to be similar for all children, the timing and abilities can vary widely, demonstrating that environmental and cultural factors play an important role (Adolph & Hoch, 2019). For example, in Tajikistan, infants are regularly swaddled and placed in *gahvora* cradles for long periods of time. Because of their temporary immobility, these infants reach motor milestones later (Karasik et al., 2018).

In Northern China, where infants lie on their backs with their body movement restricted by being buried in a bag of fine sand for most of the day for toileting practice, the onset of sitting, crawling, and walking is delayed by several months (Mei, 1994). In other cultures, such as in the United States, Argentina, South Korea, and Italy, infants spend a lot of time sitting with postural support from furniture (United States and Argentina) or their mother's arms (South Korea and Italy) (Karasik et al., 2015). In contrast, infants in Western Kenya have

more practice with both supported and independent sitting, which may allow them to sit independently somewhat earlier than in cultures where infants are provided with a lot of support while sitting (Karasik et al., 2015).

Crawling and walking also show great variability based on culture and parenting beliefs. In some cultures, infants skip crawling or walk before they crawl, based on factors like maternal handling, cultural beliefs, and whether parents encourage or discourage crawling (Adolph et al., 2018; Super, 1976). Parenting beliefs can also influence the way they handle their infants. In some cultures, caregivers perform exercises to encourage motor development that might be viewed as rough in another culture (Adolph et al., 2018).

In another example, research following the Back to Sleep campaign has shown that infants placed on their backs while sleeping reach some motor milestones significantly later than infants who slept on their stomachs (Brouwer et al., 2006; Johnson, 2004). In response, pediatricians began encouraging parents to give their infants "tummy time," which is associated with earlier development of gross motor skills such as walking, standing, and sitting (Hewitt et al., 2020).

Play

Play uses motor skills and cognitive skills, both connected to brain development. For example, with time and practice, the infant who begins by grasping a spoon is soon able to use it as a tool for eating. Besides the physical ability required to do this, the child also uses cognitive skills to play. Using paintbrushes, crayons, balls, and blocks in play takes similar planning and coordination. By one year, the child can point to objects of interest, use more motor skills to explore environments, and interact more with others during playtime. At eighteen months, the child may seek interaction, enjoy patty-cake, and clap during play. Parents and caregivers can support motor development through play by providing age-appropriate toys and activities and encouraging exploration and movement in a safe, supportive environment (Table 3.8).

Play Activity	Motor Development	Age Range
Tummy time	Spending supervised time on their tummy can help infants strengthen neck and upper body muscles.	Infancy
Baby gym	Playing under a play gym with hanging toys encourages babies to reach and grasp.	Infancy
Mirror play	Playing with a baby-safe mirror encourages visual tracking and body awareness.	6 months–2 years
Crawling tunnel	Crawling through a toy tunnel promotes mobility and exploration.	6 months–1 year
Puzzles and building blocks	Interacting with age-appropriate puzzles and soft building blocks improves problem-solving skills, hand-eye coordination, and gross and fine motor skills.	6 months–2 years
Dance and music	Moving to music strengthens balance and coordination.	6 months–2 years

TABLE 3.8 Play Activities and Related Motor Skills

Play Activity	Motor Development	Age Range
Arts and crafts	Finger painting, coloring, and cutting with safety scissors promote fine motor skills and creativity.	1–2 years
Obstacle courses	Engaging with a simple obstacle course with cushions, pillows, and tunnels encourages crawling, climbing, and balance.	1–2 years
Puppet shows	Interacting with puppets enhances visual tracking and fine motor skills.	1–2 years

TABLE 3.8 Play Activities and Related Motor Skills

Play starts in infancy and can inform several aspects of early development including motor skills, social interaction, self-exploration, and exploration of the environment. Play also helps caregivers and health-care providers observe how well development is progressing.

References

Adolph K. E., & Franchak J. M. (2017). The development of motor behavior. *WIREs Cognitive Science*, *8*(1-2), e1430. https://doi.org/10.1002/wcs.1430

Adolph, K. E., & Hoch, J. E. (2019). Motor development: Embodied, embedded, enculturated, and enabling. *Annual Review of Psychology*, *70*, 141–164. https://doi.org/10.1146/annurev-psych-010418-102836

Adolph, K. E., Hoch, J. E., & Cole, W. G. (2018). Development (of walking): 15 suggestions. *Trends in Cognitive Sciences*, *22*(8), 699–711. https://doi.org/10.1016/j.tics.2018.05.010

Barrett, T. M., Traupman, E., & Needham, A. (2008). Infants' visual anticipation of object structure in grasp planning. *Infant Behavior and Development, 31(1),* 1–9. https://doi.org/10.1016/jinfbeh.2007.05.004

Brouwer, S. I., van Beijsterveldt, T. C., Bartels, M., Hudziak, J. J., & Boomsma, D. I. (2006). Influences on achieving motor milestones: A twin/singleton study. *Twin Research and Human Genetics, 9*(3), 424–430. https://doi.org/10.1375/twin.9.3.424

Centers for Disease Control and Prevention. (2024, May 8). *CDC's developmental milestones*. U.S. Department of Health and Human Services. https://www.cdc.gov/ncbddd/actearly/milestones/index.html

Fogel, A. (2011). Theoretical and applied dynamic systems research in developmental science. *Child Development Perspectives*, *5*(4), 267–272. https://doi.org/10.1111/j.1750-8606.2011.00174.x

Fujihira, R., & Taga, G. (2023). Dynamical systems model of development of the action differentiation in early infancy: A requisite of physical agency. *Biological Cybernetics*, *117*, 81–93. https://doi.org/10.1007/s00422-023-00955-y

Heidenreich, S. (2021, May 6). *Understanding primitive reflexes: How they impact child development and intervention strategies for integration.* OccupationalTherapy.com, Article 5409. https://www.occupationaltherapy.com/articles/understanding-primitive-reflexes-they-impact-5409-5409

Hewitt, L., Kerr, R., Stanley, R.M., & Okely, A. D. (2020). Tummy time and infant health outcomes: A systematic review. *Pediatrics, 145*(6), Article e20192168. https://doi.org/10.1542/peds.2019-2168

Hoch, J., Hospodar, C., Koch da Costa Aguiar Alves, G., & Adolph, K. (2024). Variations in infants' physical and social environments shape spontaneous locomotion. *Developmental Psychology*, *60*(6) 991–1001. https://dx.doi.org/10.1037/dev0001745

Johnson, K. (2004). "Back to sleep" cuts tummy time; still vital to put babies on back to sleep. *Pediatric News, 38*, 1–3.

Karasik, L. B., Tamis-LeMonda, C. S., Ossmy, O., & Adolph, K. E. (2018). The ties that bind: Cradling in Tajikistan. *PLoS ONE, 13*(10), Article e0204428. https://doi.org/10.1371/journal.pone.0204428

Karasik, L. B., Tamis-LeMonda, C. S., Adolph, K. E., & Bornstein, M. H. (2015). Places and postures: A cross-cultural comparison of sitting in 5-month-olds. *Journal of Cross-Cultural Psychology, 46*(8), 1023–1038. https://doi.org/10.1177%2F0022022115593803

McGraw, M. B. (1935). *Growth: a study of Johnny and Jimmy*. Appleton-Century.

Mei, J. (1994). The Northern Chinese custom of rearing babies in sandbags: Implications for motor and intellectual development. In J. H. A. van Rossum & J. I. Laszlo (Eds.), *Motor development: Aspects of normal and delayed development* (pp. 41–48). Uitgeverij.

Morizawa, Y. M., Matsumoto, M., Nakashima, Y., Endo, N., Aida, T., Ishikane, H., Beppu, K., Moritoh, S., Inada, H., Osumi, N., Shigetomi, E., Koizumi, S., Yang, G., Hirai, H., Tanaka, K., Tanaka, K. F., Ohno, N., Fukazawa, Y., & Matsui, K. (2022). Synaptic pruning through glial synapse engulfment upon motor learning. *Nature neuroscience*, *25*(11), 1458–1469. https://doi.org/10.1038/s41593-022-01184-5

Noritz, G. H., Murphy, N. A., & Neuromotor Screening Expert Panel (2013). Motor delays: Early identification and evaluation. *Pediatrics*, *131*(6), e2016–e2027. https://doi.org/10.1542/peds.2013-1056

Ooki, S. (2006). Motor development of Japanese twins in childhood as reported by mothers. *Environmental Health and Preventive Medicine*, *11*, 55–64. https://doi.org/10.1265/ehpm.11.55

Parnin, B. (2022, January 20). *Experimenting with babies: The Myrtle McGraw collection*. Indiana University Bloomington. https://blogs.libraries.indiana.edu/filmarch/2022/01/20/experimenting-with-babies-the-dr-myrtle-mcgraw-collection/

Spencer, J. P., Perone, S., & Buss, A. T. (2011). Twenty years and going strong: A dynamic systems revolution in motor and cognitive development. *Child development perspectives*, *5*(4), 260–266. https://doi.org/10.1111/j.1750-8606.2011.00194.x

Super, C. M. (1976). Environmental effects on motor development: The case of "African infant precocity". *Developmental Medical Child Neurology, 18*(5), 561–567. https://doi.org/10.1111/j.1469-8749.1976.tb04202.x

Swapna, N., Kumar, P., Kalam, B. R., Anju, V. A., & Arunraj, K. (2020). Diagnostic relevance of primitive reflexes in high-risk newborns: A systematic review. *Journal of Indian Speech Language & Hearing Association*, *34*(1), 24–30. http://dx.doi.org/10.4103/jisha.JISHA_22_19

Thelen, E. & Smith, L. B. (2007). Dynamic systems theory (Vol. 1): Theoretical models of human development. *Handbook of Child Psychology*. https://doi.org/10.1002/9780470147658.chpsy0106

Thelen, E., & Ulrich, B. D. (1991). Hidden skills: A dynamic systems analysis of treadmill stepping during the first year. *Monographs of the Society for Research in Child Development, 56*(1). Article 104. https://doi.org/10.2307/1166099

Tiemeier, H., Lenroot, R. K., Greenstein, D. K., Tran, L., Pierson, R., & Giedd, J. N. (2010). Cerebellum development during childhood and adolescence: a longitudinal morphometric MRI study. *Neuroimage*, *49*(1), 63 –70. https://doi.org/10.1016/j.neuroimage.2009.08.016

WHO Multicentre Growth Reference Study Group, & de Onis, M. (2006). Assessment of sex differences and heterogeneity in motor milestone attainment among populations in the WHO Multicentre Growth Reference Study [Supplemental material]. *Acta Paediatrica, 95*(S450), 66–75. https://doi.org/10.1111/j.1651-2227.2006.tb02377.x

3.3 Sensory Development in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain how sensation and perception typically develop in infants and toddlers
- Define the relationship between sensation and perception in infants and toddlers
- Describe influences on sensation and perception among infants and toddlers

At first Amy is surprised that their two-week-old daughter Karina turns her head when she hears Amy's voice. But as Amy thinks about this behavior, they realize that since hearing develops before birth, Karina has been listening to their voice for many months now. Amy mentions this observation to a friend who is an audiologist, who tells them that hearing is one of a newborn's most highly developed senses.

The development of the senses is a crucial achievement in the first two years of life. Healthy infants are born with the ability to detect visual, auditory, tactile, gustatory (taste), and olfactory (smell) sensations. As they grow and develop, they become more adept at decoding these stimuli, a skill that helps them make sense of the world around them. Sensory development relies on both **sensation**, the detection of sensory stimuli, and **perception**, the interpretation of that sensory information. In this section, you'll explore sensory development in infants and toddlers.

Vision

Although newborns can see, vision is the sense that is least developed at birth. The womb is a dark place, offering limited opportunity to use this sense. At birth, the anatomical visual structures are present but still very immature, resulting in blurry vision and uncoordinated eye movements, and an infant's vision is best at viewing close-up objects, such as a face or breast when being held. Newborns have low visual acuity, which is their ability to see precise detail (Figure 3.14). Over the first year of life, babies develop the same visual acuity of adults (Johnson, 2011; Kellman & Arterberry, 2006). Their contrast sensitivity, the ability to see differences in shades of light or outlines, is also quite weak at birth but improves quickly (Johnson, 2011; Kellman & Arteberry, 2006). For example, an infant would perceive a black-white stripe contrast but may not distinguish between two shades of gray.

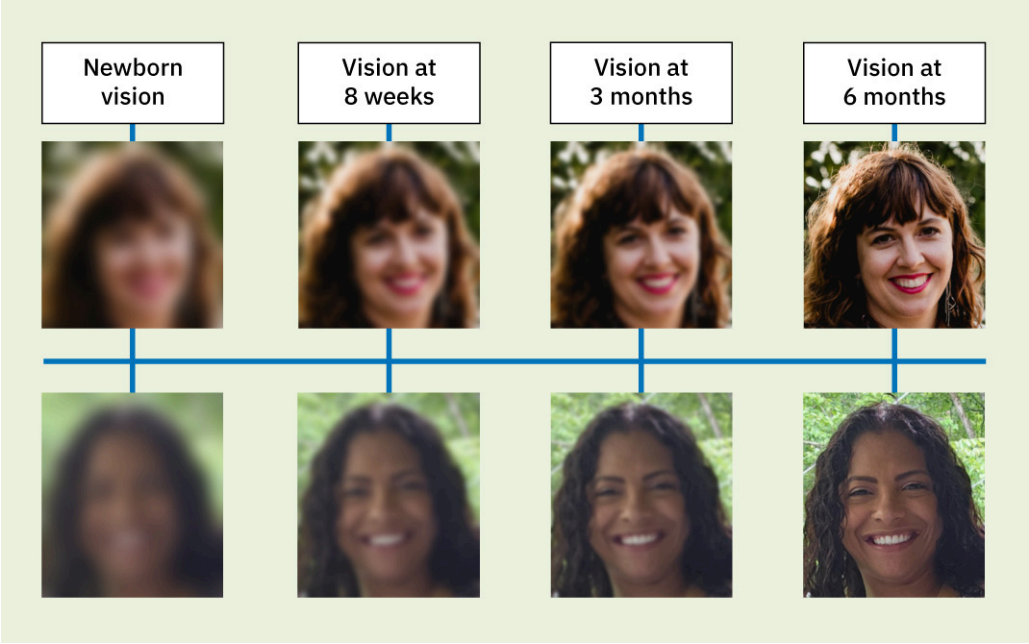


FIGURE 3.14 Newborns' visual acuity increases as their vision develops over the first months of life. Seeing the shapes and contrasts of a caregiver's face is an important part of this growth. (credit top: modification of work "Mini headshot" by Diana Riser/Flickr, CC BY 4.0; credit bottom; modification of work "Headshot" by Zenobia Rice/Flickr,

CC BY 4.0)

One common misconception is that newborns can see only black and white. However, at birth, infants do have some basic color vision, specifically for bright colors like blue, green, and red, with some research indicating infants often prefer blue (Skelton & Franklin, 2020). Color vision develops steadily during the first year of life due to the strengthening of cones, the cells in the retina of the eyes that are sensitive to color and detail. Around four to six months of age, infants can discriminate between colors almost as well as adults do (Clifford et al., 2009).

Young infants also lack the eye motor control and neural development to track moving objects efficiently, which plays a role in their scanning of faces. While you might first look at someone's eyes to gather social cues and other information, a one-month-old infant will focus on the outside of the face, the hairline and chin, but by three to four months of age, infants are looking at both the mouth and eyes when scanning faces. By nine months, infants look at the eyes more than the mouth, showing development in vision and early social interaction cues (Wilcox et al., 2013). As the visual system develops over the first two to three months of life, infants begin to seek more detail and prefer images of faces over other geometric patterns (Ichikawa et al., 2013).

Depth Perception

Depth perception, the ability to tell whether objects are nearer or farther than other objects, is not present at birth. At about two months of age, as infants acquire binocular vision or the ability of the eyes to work together, they begin to perceive depth. By six months, infants can distinguish depth perception in pictures too (Kavšek et al., 2012).

The **visual cliff** developed by Eleanor J. Gibson and R.D. Walk (1960) (Figure 3.15) made a major contribution to our understanding of depth perception. It consists of a table with a glass top that covers a checkered pattern. Half the pattern appears to be directly under the glass, while the other half appears to be several feet below it. Infants who were able to crawl were placed on the center of the table to see whether they'd crawl to the shallow side, and then to the deep side that appeared to have a steep drop-off. Few of the six- to fourteen-month-old infants would cross, indicating that depth perception was present by six months of age.

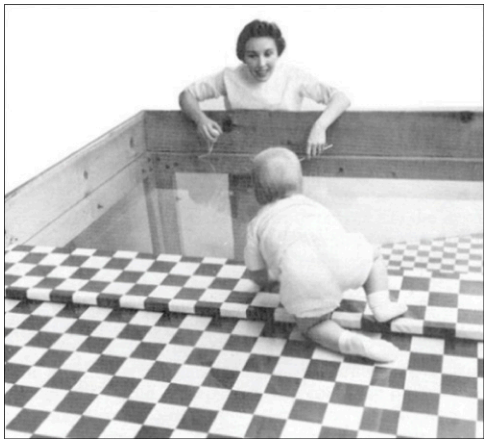


FIGURE 3.15 An infant is placed on the center of the visual cliff as the mother observes the child's depth perception and willingness to crawl to her. (credit: modification of work "F9: A mother urging her child from across the deep side of the visual cliff. Despite a transparent surface covering the cliff, the child hesitates to move forward. Source: From Gibson and Walk (1960). Copyright 1960 Nature Publishing Group; reprinted by permission." by National Library of Medicine/CC BY 4.0)

Infants with more locomotor experience (crawling and exploring) are more sensitive to visual depth cues. For example, those who have just begun walking will avoid the deep side of the cliff even more than infants who are crawling (Adolph & Kretch, 2012; Dahl et al., 2013). Since the original study, psychologists now note how many

different internal systems are involved in this task. To make a choice to crawl across or not, infants need to have the binocular vision and eye muscle coordination to sense depth (sensation), the ability to perceive or understand that cliff (perception), and the motor experience and learning to make a choice based on the environment.

LINK TO LEARNING

Some developmental psychologists have used the visual cliff experiment to demonstrate that infants develop a fear of heights as they begin to crawl. However, as this video demonstrates, over the last twenty-five years, Karen Adolph from NYU's Infant Action Lab has conducted a series of experiments showing instead that babies learn from their experiences and adapt their movement (https://openstax.org/r/104InfantAdapt) as they grow and learn.

Visual Preferences

Infants have clear visual preferences. When given two visual stimuli to look at, they will often look longer at one than at the other. Even as newborns, infants show a preference for curved over straight lines, human faces and face shapes, and three-dimensional objects over two-dimensional ones (Johnson, 2011). They also prefer new images to familiar ones, faces to patterns, and patterns to solids. By three months of age, infants will look more at female than male faces when their primary caregiver is female, but they do not show this preference when their primary caregiver is male (Bayet et al., 2015).

LINK TO LEARNING

Infants are born with clear visual preferences for certain types of visual stimuli. Watch this video showing how researchers have been able to identify these visual preferences using creative studies (https://openstax.org/r/104VisualPref) to measure their preferences.

Hearing

Infants develop a sense of hearing around the fifth month of prenatal development. Before birth, they have many opportunities to hear the biological mother's heartbeat, voice, and other internal sounds, so hearing is already an active sense at birth. Verifying an infant's hearing is an important first step in identifying hearing difficulties and providing the unique support all babies need to acquire language and communication skills, learn from the environment, and have early social interactions (Bower et al., 2023). Some infants may need surgery to ensure the ear is functioning properly, while others can begin sign language or other interventions such as cochlear implants as early as possible.

Research has shown that newborns prefer speech sounds over nonspeech sounds (May et al., 2018). They also prefer to hear their native language even though they can discriminate most sounds in other human languages (Jusczyk et al., 1994; Kisilevsky, 2016). We also know that infants prefer books the biological mother read aloud when seven months pregnant to a story not previously heard (DeCasper & Spence, 1986). Although early research found that infants prefer their biological mother's voice over other voices when both were saying the same things (DeCasper & Fifer, 1980), recent research suggests that infants are responding to familiarity rather than to a particular person (Kragness et al., 2022).

How do we know infants have these abilities? After all, they can't tell us their preferences. In one method, called the high-amplitude sucking technique, infants are given a special pacifier that sends information about their sucking intensity and frequency to a computer. Whenever the infants produce a strong (high-amplitude) suck, they hear a sound. They quickly learn that sucking controls the sounds and will suck more strongly and more frequently to hear the sounds they like the most (DeCasper & Fifer, 1980). During one early study using this technique (DeCasper & Spence, 1986), some mothers read *The Cat in the Hat* aloud during pregnancy (an average of sixty-seven times for 3.5 hours of exposure overall) and others didn't. The infants who had heard

the story in utero sucked more when hearing it after birth, indicating they preferred it, while those in the control group who had no prior exposure did not have a preference.

LINK TO LEARNING

When does learning begin? Before we are born. This TED conference video presents science writer Annie Murphy Paul talking about new research (https://openstax.org/r/104LearninWomb) that shows how much we learn in the womb.

Touch

Touch is the most highly developed sense at birth and makes a critical contribution to our physical, cognitive, and socioemotional development. It is part of the somatosensory system and starts developing around week eight of pregnancy, beginning with touch receptors, the neurons that respond to touch. By approximately week thirty, the fetus can feel pain, pressure, and differences in temperature (hot versus cold). This means newborns are sensitive to pain during procedures like blood tests and surgeries (Garcia-Rodriguez et al., 2021).

Touch can also promote positive experiences with the world from birth. Newborns have sensitive skin and will respond to touch with reflexes like the rooting, sucking, and Moro reflexes discussed earlier. Being touched helps infants build relationships with others when they are held and cared for (Carozza & Leong, 2021). In fact, skin-to-skin contact between parents and babies (sometimes called "kangaroo care") is encouraged right after birth to begin the bonding process, and it has also been shown to have real health benefits for the newborn (Mehrpisheh et al., 2022; Yildirim et al., 2023). Gentle touch also improves mood, sleep, growth, and health in premature infants (Fadlalmola et al., 2023; Wang et al., 2015). Finally, touch provides sensory experience with the world, supporting spatial awareness, body awareness, motor development, and learning (Della Longa et al., 2020; Seidl et al., 2023).

Taste and Smell

Taste and smell help us identify flavors and thus directly influence the foods we choose and thereby our nutrition. Taste is the sensation of flavor—sweet, salty, bitter, sour, or savory—that we receive from receptors in the mouth and on the tongue. Smell is our perception of odors via the nose; it's a function of the olfactory system (nose and mouth). Both **taste** and **smell** begin developing prenatally.

Infants prefer the familiar scents of their biological mothers. For example, six-day-old infants turn more often toward a breast milk pad scented with their biological mother's milk than one scented by a donor (Loos et al., 2019; Porter et al., 1992). As early as one day after birth, infants are also soothed by the smell of their mother (André et al., 2020; Sullivan et al., 2011).

As a first taste experience, the fetus starts swallowing amniotic fluid by around week twelve and can perceive distinct flavors based on the biological mother's diet. A newborn will show signs of recognizing those flavors (Mennella, 2014), and many will exhibit a preference for flavors and scents to which they were exposed via amniotic fluid (Lipchock et al., 2011). For example, the newborns of biological mothers who consumed more garlicky food in pregnancy were more accepting of garlic odors, as indicated by mouthing and head orientation (Forestell, 2020, 2024; Hepper, 1988). This finding held true for anise, carrot, mint, vanilla, blue cheese, fruits, and vegetables (Bakalar, 2012; Gabriel & Mennella, 2023).

Newborns enter the world able to distinguish between sweet, sour, bitter, and salty flavors, and within hours of being born, they show different facial expressions for different flavors. For bitter, they might wrinkle their nose or frown; for sweet or savory, they make rhythmic tongue protrusions, elevate the corners of the mouth, or smack their lips (Lipchock et al., 2011). Infants continue to acquire taste preferences through flavors in human milk or formula. The flavor of human milk changes based on the mother' diet. Infants and young children who are fed human milk as infants are more accepting of new foods that were a part of their mother's diet (Dunn &

Lessen, 2017). Formula-fed infants have also been shown to prefer the flavor of the formula they consume, but because there is no variation in the flavor, they are often less accepting of new foods at first than infants fed human milk (Forestell, 2017).

Intermodal Perception

If you eat an ice cream sundae, you simultaneously see the dripping hot fudge, feel the cold sensation of the first spoonful, and taste the sweetness of the chocolate flavor. An awareness of the world gained through multiple senses at the same time is known as **intermodal perception**.

The integration of auditory and visual sensory information is one of the first intermodal pairings we make. For example, one study showed that four-month-olds can connect the sound of a ball to the height of its bounce (Lewkowitz, 1999). Infants as young as two months can connect phonetic information from the lips and from the voice. In other words, they can tell whether spoken words match the movement of the lips (Choi et al., 2021; Edgar et al., 2022). Motor skills can help facilitate infants' ability to integrate intermodal perception. For example, the ability to turn the head and reach for a toy allows the infant to see, touch, and process information about the toy at the same time. Similarly, parental lip smacking during mealtime also serves as an important signal for the infant about the process of eating and can encourage infants to start feeding (Wiggins & Keevallik, 2021). Thus, intermodal connections allow infants to link perceptual experiences and information in their environment, an important task in cognitive development (Streri & de Havia, 2023).

We have seen that newborns can use all their senses to gain information about their world. These sensory and perceptual abilities are still immature but quickly develop over the first year of life to adult levels (Johnson & Hannon, 2015). Understanding the sensory abilities of infants along with their perceptual preferences allows us to interact with them in more effective ways and to use the appropriate stimuli to support their development.

References

Adolph, K. E., & Kretch, K. S. (2012). Infants on the edge. *Developmental Psychology: Revisiting the Classic Studies*, 36–55. Sage Publications Ltd.

André, V., Henry, S., Vuillemin, A., Beuchée, A., Sizun, J., Roué, J. M., Lemasson, A., Misery, L., Hausberger, M., & Durier, V. (2020). A novel, short and easy–to–perform method to evaluate newborns' social olfactory preferences. *Animal Cognition, 23*, 843–850. https://doi.org/10.1007/s10071-020-01397-w

Bakalar, N. (2012). Sensory science: Partners in flavour. *Nature, 486*, S4–S5. https://doi.org/10.1038/486S4a

Bower, C., Reilly, B. K., Richerson, J., & Hecht, J. L. (2023). Hearing assessment in infants, children, and adolescents: Recommendations beyond neonatal screening. *Pediatrics*, *152*(3), Article e2023063288. https://doi.org/10.1542/peds.2023-063288

Bayet, L., Quinn, P. C., Tanaka, J. W., Lee, K., Gentaz, É., Pascalis, O. (2015). Face gender Influences the looking preference for smiling expressions in 3.5-month-old human infants. *PLoS One*, *10*(6), Article e0129812. https://doi.org/10.1371/journal.pone.0129812

Carozza, S., & Leong, V. (2021). The role of affectionate caregiver touch in early neurodevelopment and parent–infant interactional synchrony. *Frontiers in Neuroscience*, *14*, Article 613378. https://doi.org/10.3389/fnins.2020.613378

Choi, D., Dehaene–Lambertz, G., Peña, M., & Werker, J. F. (2021). Neural indicators of articulator-specific sensorimotor influences on infant speech perception. *Proceedings of the National Academy of Sciences*, *118*(20), Article e2025043118. https://doi.org/10.1073/pnas.2025043118

Clifford, A., Franklin, A., Davies, I. R., & Holmes, A. (2009). Electrophysiological markers of categorical perception of color in 7–month old infants. *Brain and Cognition*, *71*(2), 165–172. https://doi.org/10.1016/j.bandc.2009.05.002

Dahl, A., Campos, J. J., Anderson, D. I., Uchiyama, I., Witherington, D. C., Ueno, M., Poutrain–Lejeune, L., & Barbu–Roth, M. (2013). The epigenesis of wariness of heights. *Psychological Science*, *24*(7), 1361–1367. https://doi.org/10.1177/0956797613476047

DeCasper, A. J., & Fifer, W. P. (1980). Of human bonding: Newborns prefer their mothers' voices. *Science*, *208*(4448), 1174–1176. https://doi.org/10.1126/science.7375928

DeCasper, A. J., & Spence, M. J. (1986). Prenatal maternal speech influences newborns' perception of speech sounds. *Infant Behavior and Development*, *9*(2), 133–150. https://doi.org/10.1016/0163-6383(86)90025-1

Della Longa, L., Filippetti, M. L., Dragovic, D., & Farroni, T. (2020). Synchrony of caresses: Does affective touch help infants to detect body–related visual–tactile synchrony? *Frontiers in Psychology*, *10*, 2944. https://doi.org/10.3389/fpsyg.2019.02944

Dunn, R. L., & Lessen, R. (2017). The influence of human milk on flavor and food preferences. *Current Nutrition Reports*, *6*, 134–140. https://doi.org/10.1007/s13668-017-0200-3

Edgar, E. V., Todd, J. T., & Bahrick, L. E. (2022). Intersensory matching of faces and voices in infancy predicts language outcomes in young children. *Developmental Psychology*, *58*(8), 1413–1428. https://doi.org/10.1037/dev0001375

Fadlalmola, H.A., Elhusein, A.M., Abedelwahed, H.H., Mohmed, S.A., Alnassry, A. M.A., Mohammed, F.H., Eltaher, N.S., Ebrahim, E. E., Abdelsadig, M. A., Ahmed, S. O.M., Farg, S. J., Ahmed, A. S. M., Mohmmed, S. S., Ali, A. M., Banaga, A. E., Mohammed, I. H., El-Amin, E. I., Moafa, H. N., Mohamed, A. H., Balola, H. H. A., Idress, E. A., Abraham, N., Sagiron, E. I. A., Jarelnape, A. A., Alhajeri, S. T., Alazhary, A. A., Alhawsawi, A. O., & Idris, A.M. (2023). The effects of Yakson touch and gentle human touch on preterm infants: A systematic review and meta–analysis. *African Journal of Reproductive Health, 27*(7), 99–108. https://doi.org/10.29063/ajrh2023/v27i7.10

Forestell, C. A. (2017). Flavor perception and preference development in human infants. *Annals of Nutrition and Metabolism*, *70*(Suppl. 3), 17–25. https://doi.org/10.1159/000478759

Forestell, C. A. (2020). You are what your parents eat: Parental influences on early flavor preference development. *Building Future Health and Well–Being of Thriving Toddlers and Young Children, 95*, 78–87. https://doi.org/10.1159/000511516

Forestell, C. A. (2024). Does maternal diet influence future infant taste and odor preferences? A critical analysis. *Annual Review of Nutrition, 44.* https://doi.org/10.1146/annurev-nutr-121222-101404

Gabriel, A. S., & Mennella, J. A. (2023). Umami taste: Inborn and experiential effects on taste acceptance and satiation during infancy. In *Umami: Taste for Health* (pp. 127–145). Cham: Springer International Publishing.

Garcia–Rodriguez, M. T., Bujan–Bravo, S., Seijo–Bestilleiro, R., & Gonzalez–Martin, C. (2021). Pain assessment and management in the newborn: A systematized review. *World Journal of Clinical Cases*, *9*(21), 5921–5931. https://doi.org/10.12998/wjcc.v9.i21.5921

Gibson, E.J., & Walk, R.D. (1960). Visual cliff. *Scientific American.*

Hepper, P. G. (1988). Adaptive fetal learning: Prenatal exposure to garlic affects personal preferences. *Animal Behaviour, 36,* 935–936. https://doi.org/10.1016/S0003-3472(88)80177-5

Ichikawa, H., Tsuruhara, A., Kanazawa, S., & Yamaguchi, M. K. (2013). Two–to three–month–old infants prefer moving face patterns to moving top–heavy patterns.

Japanese Psychological Research, *55*(3), 254–263. https://doi.org/10.1111/j.1468-5884.2012.00540.x
Johnson, S. P. (2011). Development of visual perception. *Wiley Interdisciplinary Reviews: Cognitive Science*, *2*(5), 515–528. https://doi.org/10.1002/wcs.128
Johnson, S. P., & Hannon, E. E. (2015). Perceptual development. In L. S. Liben, U. Müller, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Cognitive processes* (7th ed., pp. 63–112). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118963418.childpsy203
Jusczyk, P. W., Luce, P. A., & Charles–Luce, J. (1994). Infants' sensitivity to phonotactic patterns in the native language. *Journal of Memory and Language, 33*(5), 630–645. https://doi.org/10.1006/jmla.1994.1030
Kavšek, M., Yonas, A., & Granrud, C. E. (2012). Infants' sensitivity to pictorial depth cues: A review and meta–analysis of looking studies. *Infant Behavior and Development, 35*(1), 109–128. https://doi.org/10.1016/j.infbeh.2011.08.003
Kellman, P. J., & Arterberry, M. E. (2006). Infant visual perception. In D. Kuhn, R. S. Siegler, W. Damon, & R. M. Lerner (Eds.), *Handbook of Child Psychology: Cognition, Perception, and Language* (6th ed., pp. 109–160). John Wiley & Sons, Inc.
Kisilevsky, B. S. (2016). Fetal auditory processing: Implications for language development? *Fetal development: Research on Brain and Behavior, Environmental Influences, and Emerging Technologies*, 133–152. https://doi.org/10.1007/978-3-319-22023-9_8
Kragness, H. E., Johnson, E. K., & Cirelli, L. K. (2022). The song, not the singer: Infants prefer to listen to familiar songs, regardless of singer identity. *Developmental Science, 25*(1), Article e13149. https://doi.org/10.1111/desc.13149
Lewkowicz, D. J. (1999). The development of temporal and spatial intermodal perception. In *Advances in Psychology* (Vol. 129, pp. 395–420). North–Holland. https://doi.org/10.1037/0033-2909.126.2.281
Lipchock, S. V., Reed, D. R., & Mennella, J. A. (2011). The gustatory and olfactory systems during infancy: implications for development of feeding behaviors in the high-risk neonate. *Clinics in Perinatology*, *38*(4), 627–641. https://doi.org/10.1016/j.clp.2011.08.008
Loos, H. M., Reger, D., & Schaal, B. (2019). The odour of human milk: Its chemical variability and detection by newborns. *Physiology & Behavior*, *199*, 88–99. https://doi.org/10.1016/j.physbeh.2018.11.008
May, L., Gervain, J., Carreiras, M., & Werker, J. F. (2018). The specificity of the neural response to speech at birth. *Developmental Science*, *21*(3), Article e12564. https://doi.org/10.1111/desc.12564
Mehrpisheh, S., Doorandish, Z., Farhadi, R., Ahmadi, M., Moafi, M., & Elyasi, F. (2022). The Effectiveness of Kangaroo Mother Care (KMC) on attachment of mothers with premature infants. *European Journal of Obstetrics & Gynecology and Reproductive Biology: X*, *15*, Article 100149. https://doi.org/10.1016/j.eurox.2022.100149
Mennella, J. A. (2014). Ontogeny of taste preferences: basic biology and implications for health. *The American Journal of Clinical Nutrition*, *99*(3), 704S–711S. https://doi.org/10.3945/ajcn.113.067694
Patel, J. K., Rouster, A. S. (2023). Infant Nutrition Requirements and Options. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK560758/
Porter, R. H., Makin, J. W., Davis, L. B., & Christensen, K. M. (1992). Breast–fed infants respond to olfactory cues from their own mother and unfamiliar lactating females. *Infant Behavior and Development*, *15*(1), 85–93. https://doi.org/10.1016/0163-6383(92)90008-T
Seidl, A. H., Indarjit, M., & Borovsky, A. (2023). Touch to learn: Multisensory input supports word learning and processing. *Developmental Science*, Article e13419. https://doi.org/10.1111/desc.13419
Skelton, A. E., & Franklin, A. (2020). Infants look longer at colours that adults like when colours are highly saturated. *Psychonomic Bulletin & Review*, *27*(1), 78–85. https://doi.org/10.3758/s13423-019-01688-5
Streri, A., & de Hevia, M. D. (2023). How do human newborns come to understand the multimodal environment?. *Psychonomic Bulletin & Review*, *30*(4), 1171–1186. https://doi.org/10.3758/s13423-023-02260-y
Sullivan, R., Perry, R., Sloan, A., Kleinhaus, K., Burtchen, N. (2011). Infant bonding and attachment to the caregiver: insights from basic and clinical science. *Clinics in Perinatology*, *38*(4), 643–55. https://doi.org/10.1016/j.clp.2011.08.011
Wang, Z. W., Hua, J., & Xu, Y. H. (2015). The relationship between gentle tactile stimulation on the fetus and its temperament 3 months after birth. *Behavioural Neurology*, *2015*(1), Article 371906. https://doi.org/10.1155/2015/371906
Wiggins, S., & Keevallik, L. (2021). Parental lip-smacks during infant mealtimes: Multimodal features and social functions. *Interactional Linguistics*, *1*(2), 241–272. https://doi.org/10.1075/il.21006.wig
Wilcox, T., Stubbs, J. A., Wheeler, L., & Alexander, G. M. (2013). Infants' scanning of dynamic faces during the first year. *Infant Behavior & Development*, *36*(4), 513–516. https://doi.org/10.1016/j.infbeh.2013.05.001
Yildirim, F., Duman, N. B., Şahin, E., & Vural, G. (2023). The effect of kangaroo care on paternal attachment: A randomized controlled study. *Advances in Neonatal Care*, *23*(6), 596–601. https://doi.org/10.1097/anc.0000000000001100

3.4 Cognition and Memory in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify milestones in cognitive development in infants and toddlers
- Describe the different methods for studying infant cognition
- Describe the types of memory and what is known about memory development in infancy
- Compare the major theories of cognitive development in infants and toddlers
- Describe variations in cognitive development in terms of environmental factors

Dante is the fourth child in his family and is now fifteen months old. As his grandfather begins to prepare dinner, he settles Dante on the floor where he can see him and gives him a wooden spoon, some teaspoons, and some pots and pans. Dante immediately begins to bang on the pans with the wooden spoon and then does the same with the teaspoons. He also takes the teaspoons and drops them into the smaller pot and then dumps them back out again. He repeats this process several times. Dante's grandpa may not love the noise, but he loves knowing that his grandson is actively learning. He understands that toddlers need to explore their world using their senses and their motor skills, and that even everyday objects can be entertaining for young children.

In this section, you'll learn the main theories of cognitive development. First is Piaget's groundbreaking work, which continues to influence the fields of child development and education. Then you'll consider current methods used to study infant and toddler cognition and an information processing model explaining the units and capacity of our attention and memory. Finally, you'll see how cultural and social experiences can influence our learning, and you'll account for individual differences in cognitive development.

Stage Theory of Cognitive Development

Jean Piaget (1896–1980) was an influential cognitive psychologist who originally trained as a biologist and philosopher. He spent more than five decades studying cognitive development and is most famous for his research and theory on the cognitive development of children. You'll consider some key principles of the first stage of his theory in this section, as well as critiques of his work.

Background of Piaget's Work

In Paris in the 1920s, Piaget noticed qualitative differences in the way children of different ages, including his own three, responded to questions and explained the world (Lascarides & Hinitz, 2011). He then used his detailed notes and observations to create a stage theory of cognitive development (Table 1.2).

Piaget's theory is an example of discontinuous development, which you may recall from 1.2 Themes of Development is change that occurs in sudden shifts or as qualitative and dramatic changes in skills or behaviors. In other words, cognitive development happens in stages, in the same way a caterpillar changes into a chrysalis and then a butterfly.

Piaget theorized that we are working to make sense of the world, holding our knowledge in balance or cognitive equilibrium (Piaget, 1952, 1954). As we encounter information, we create schemas in which to catalog it. A **schema** is a mental framework that helps us organize and interpret information we receive from our environment. For example, you might have a schema for a bird: It has feathers, a beak, and wings; it flies; it lays eggs in a nest. You might even include a pet parakeet you had as an example.

Children develop and adjust schemas when they interact with their physical and social environments, experimenting and applying trial and error. Piaget explained these adjustments as the cognitive processes of **assimilation** and **accommodation**. Assimilation occurs when the information from your environment fits what you already know. Accommodation happens when you need to make changes to your knowledge because something doesn't fit your existing schema. For example, a child might see a parrot and realize it is a bird with a beak and wings that flies (assimilation), but the child will need to accommodate when seeing a penguin, which is flightless, or a flamingo, which has a different body shape (Figure 3.16).

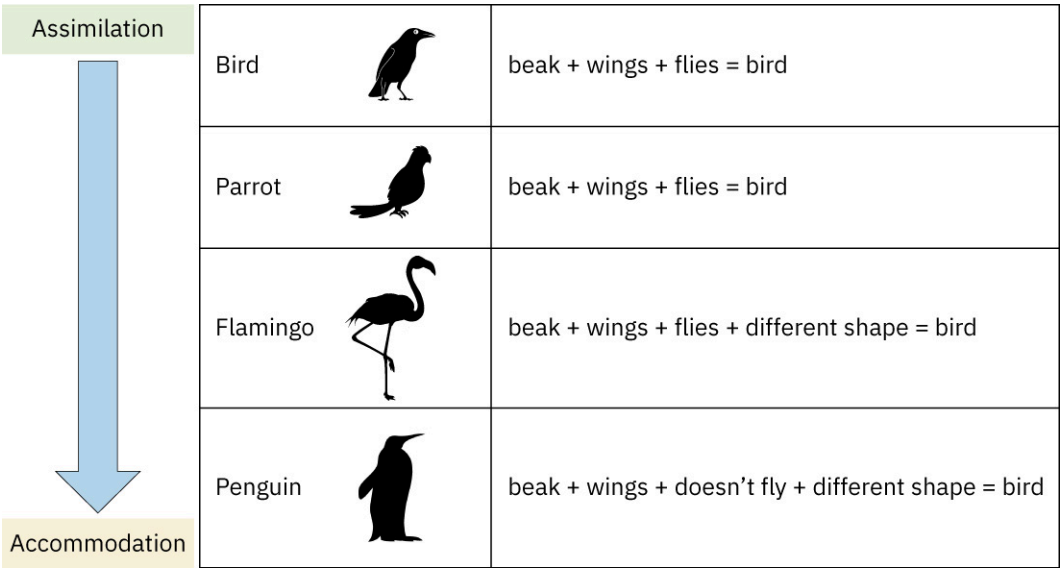


FIGURE 3.16 Assimilation fits new information into existing schemas, while accommodation rearranges, redefines, or creates schemas to make space for new information. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Both assimilation and accommodation occur throughout life as we adapt to our environments. Piaget theorized that the organization and coordination of schemas can lead to cognitive changes. When we go through major

cognitive changes, we develop a new way of thinking and may even enter a new cognitive development stage.

Stage 1: Sensorimotor Development

Although Piaget's theory is based not on age but on skills and ways of thinking, infants and toddlers are in stage 1. This **sensorimotor development** stage focuses primarily on children's early experiences of the world, when they are actively learning through their senses and gaining motor development coordination. Piaget divided stage 1 into six substages representing different abilities that appear over the first two years of life (Table 3.9).

Substage	Characteristics	Estimated Age
1	Simple reflexes: reflexes begin to be adapted	Birth–1 month
2	Primary circular reactions: infant repeats actions with own body	1–4 months
3	Secondary circular reactions: infant shifts attention to environment, explores it more	4–8 months
4	Coordination of secondary circular reactions: infant starts interacting via goal-directed behavior, coordinating sensory abilities; development of object permanence	8–12 months
5	Tertiary circular reactions: child advances to experimenting with environment, goal-directed behavior	12–18 months
6	Beginnings of thought: child starts to use symbolic thought, language, mental representations, and deferred imitation	18 months–2 years

TABLE 3.9 Piaget's Sensorimotor Development, Stage 1

In *substage one*, Piaget classified reflexes as schemas infants had at birth and then adapted into motor skills as they used them. As the brain develops, infants gain more control over their motor skills and can, for example, suck differently on a pacifier or bottle than on a nipple. Piaget would say the adapting to different cultural tools (objects to suck on) is a way of constructing sucking schemas. In *substage two*, infants have more motor control and start **circular reaction** or repeated behaviors. These first circular reactions are considered primary because they involve the infant's own body, such as infants enjoying sucking their thumbs. The infant can start to integrate skills, such as moving the head and mouth into position for feeding and has more opportunities for building sensory and motor skills.

In *substage three*, through secondary circular reactions the infant can start to coordinate motor and sensory skills with objects in the environment, such as by shaking a rattle or visually searching for a partially hidden toy. In *substage four*, the infant has more schemas for different activities and more knowledge of the environment. They may enjoy picking up a light-up toy and transferring it from hand to hand while watching the color change. In essence, they are combining secondary circular reactions to form more complex behaviors. The infant can also now use knowledge and skills for goal-directed behavior. For example, an infant may pull their mother's hair a second time because they want to hear again that funny noise she made the first time (Figure 3.17). Piaget identified *substage four* as the time when infants also develop **object permanence**, the understanding that objects don't cease to exist when they can't be observed. For example, if you place a toy under a blanket and the baby lifts the blanket to reach for the toy, this demonstrates their understanding that

the toy continues to exist even though it is hidden.

(a)

(b)

FIGURE 3.17 In the substages of sensorimotor development, infants learn through circular reactions. They may enjoy such activities as (a) playing with a caregiver's face to elicit a certain reaction, or (b) squeezing a toy to produce a certain sound. (credit a: "Dad and child" by Kerry Ceszyk/Flickr, CC BY 4.0; credit b: "blue whale" by Sarah Evans/Flickr, CC BY 4.0)

In *substage five*, the child is an experimenter learning about the properties of an object through tertiary circular reactions (Figure 3.17). What if they drop this toy off the high chair? What if they throw it across the room, bang it on the wall? People may talk about toddlers in this stage as "little scientists."

In *substage six*, at the end of the sensorimotor period, two major developments occur: symbolic thought and deferred imitation. First, according to Piaget, **symbolic thought** is the ability to mentally represent objects, people, or events that are not present. One of the major ways children demonstrate symbolic thought is by using language to describe objects or personal experiences, such as asking for "mama" when she is away at work. Second, children can imitate others after a delay in **deferred imitation**. For example, an infant might see their sibling eating with chopsticks at lunch and then try to use two markers like chopsticks later when they are playing.

Advances in Understanding of the Sensorimotor Stage

With improvements in our tools and technology for studying infants, we've learned that Piaget underestimated their cognitive abilities, and that infants understand object permanence and other qualities of objects earlier than he theorized (Ebersbach, 2009; Woodward & Needham, 2008). For example, to observe the development of object permanence, Piaget hid an object in one place (spot A) several times while an infant was watching. After the infant demonstrated their understanding of object permanence by finding the object in spot A, the object was hidden in a new spot (spot B), again while the infant observed. Despite seeing the object placed in the new hiding place, infants typically looked for it in spot A, making what's called the **A not B error** (Figure 3.18). Piaget interpreted this error to mean infants' understanding of object permanence is still incomplete.

A not B Error			
Experiment	**Original presentation**	**Changed presentation**	**Child's Response**
Object is hidden at location A	*Child sees a toy*	*Child sees a toy hidden at location A*	*Child can find the hidden toy at location A*
Object is moved from location A to location B	*Child sees a toy hidden at location A*	*Child can find the hidden toy at location A*	*Child cannot find the hidden toy at location B*

FIGURE 3.18 When infants find the toy the first time in spot A, they show some understanding of object permanence. However, when they make the A not B error, they may show that their understanding of object permanence has not yet completely developed. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Through newer methods that don't require the infant to use the motor skill of reaching to find the object, researchers found that infants as young as four months of age can recognize aspects of object permanence (Baillargeon, 1987, Gopnik & Meltzoff, 2021; Meltzoff, 1988). They can also show deferred imitation at as early as six months of age if given opportunities to practice.

Researchers still use Piaget's tasks to study infant cognition, but in different ways. For example, in Baillargeon and colleagues' (1989, 2004) A not B task, the researcher hides an object behind one of two screens (spot A), and after a brief delay, the child is allowed to look for it, a visual search task rather than Piaget's original reach task. After two consecutive looks, the infant must shift attention when the object is hidden behind the second screen (spot B). By 7.5 months, infants can pass the A not B task if the delay is under 2 seconds for reaching or 15 seconds for looking, showing how the type of task can affect the way researchers study and understand infants' abilities (Baillargeon, 2004; Diamond, 1985).

Piaget was one of the first psychologists to develop a comprehensive theory of the way children develop, an impressive achievement when you consider that most of his ideas came from simply observing children and taking detailed notes. Even decades later, child development researchers support many of his basic ideas. His theory changed our understanding of children's development and became the foundation for subsequent theories of their cognitive development.

LINK TO LEARNING

Piaget tested object permanence in babies by using a manual reach task with a toy and blanket. This toy and blanket method (https://openstax.org/r/104Toy&Blanket) is replicated in this video, but other tasks can also assess (https://openstax.org/r/104ObjPerm) this skill, as shown in this clip.

Information Processing and Memory Development

Although infants cannot talk, psychologists can learn much about their information processing by observing them. What is the infant looking at? For how long? If shown the same image again, will the infant look away? If

shown again later, will the infant remember it? Studying infants' looking patterns, or shifts in attention, improves our understanding of their cognitive development. Information processing theory examines the way the human brain works, including in making attention and memory possible.

The Development of Attention

Researchers study different aspects of attention: when we attend, how long we can pay attention, when we might get distracted or disengaged, and when we are able to focus on one thing but ignore another. All these abilities start developing at a young age.

One aspect of infant attention is alertness. Infants spend less than 20 percent of the day in an alert state (Colombo, 2001), with the bulk of their time spent in sleep or rest. Extended alertness or **sustained attention** occurs when we hold our attention to the stimulus or task (Colombo, 2001). Infants rapidly develop their ability to direct and sustain attention over the first year (Colombo, 2001). Caregivers' attention and external stimuli like lights and sounds can support alertness in newborns. At around four months of age, the beginnings of attentional control are evident as the infant gains the ability to shift focus (Colombo, 2001; Hendry et al., 2016). At around nine months, infants show a significant increase in control and focus (Colombo, 2001; Hendry et al., 2016).

LINK TO LEARNING

Since infants can't tell us what they are interested in, researchers use creative methods to measure their attention. One such means is an eye tracker (https://openstax.org/r/104EyeTracker) that measures looking time, as this video shows.

The Development of Memory

Studying memory in infants can be quite the challenge. Try for a moment to recall your earliest memory. Do you truly remember it? Or is it a story someone in your family has told so often that you feel like you remember it? How old were you? Many of us cannot recall things from our infant and toddler years, a trait known as infantile amnesia. Memory requires a range of cognitive skills as well as brain and language development (Occhionero et al., 2023). Short-term memory is the ability to store information in our mind temporarily, while **long-term memory** consists of more permanent retention of information and skills. Researchers use several ways to identify the memory abilities of preverbal children.

Cognitive development researcher Carolyn Rovee-Collier helped reveal just how impressive infant memory capabilities and learning can be through the mobile task (Rovee-Collier, 1999). In this task, the kick rate of a two- to six-month-old infant in a crib is measured to establish a baseline. Then a ribbon is secured around the infant's ankle and attached to an overhead mobile. As the infant kicks, the mobile moves. Infants are then brought back to the lab after various delays, from one day to around two weeks. If their kicking response resumes, it indicates they remember the task. This study showed that even three-month-old infants could remember how to move the mobile for up to one week (Giles & Rovee-Collier, 2011). As babies age, the length of time they can hold information in memory increases from less than a day at two months of age to thirteen weeks at eighteen months of age (Rovee-Collier & Giles, 2010).

Sometimes we remember things more easily if given a reminder or prompt. For example, infants are often able to remember longer if given a reminder of the task or a context clue, such as using the same mobile design in the mobile task (Courage & Cowan, 2022). In other words, cues in their environment help their learning and memory. This research demonstrates that **implicit memory**, or memory that is not part of our consciousness, is present in infancy. Memory we consciously remember and recall, known as **explicit memory**, is more fragile in infancy, which helps explain why so many of our earliest memories begin later, in early childhood.

Infant Cognition and Habituation

We can study infant cognition by observing infants, assigning them various tasks, and applying newer technologies including eye-tracking equipment and EEGs (Figure 3.19). EEGs provide an ongoing assessment of the electrical activity in the brain in response to a sensory or cognitive event. Eye-tracking measures what the infant is looking at, for how long, whether attention shifts, and where. Eye tracking can also measure pupil dilation, which indicates attention. Another measure of infant cognition is heart rate. When a baby is paying attention to a stimulus, their heart rate decreases. By using multiple methods, researchers can get a clearer understanding of how the infant is processing information, what they attend to, and what interests them.

FIGURE 3.19 Technology such as EEG equipment allow researchers to study sleep and cognition in infants and toddlers. (credit: "EEGCCap" by Eric & Laurel Glenn/Flickr, CC BY 4.0)

Observing infant's **habituation**, or decreased interest in and response to repeatedly presented stimuli, can also inform our understanding of infant cognition, learning, and attention. Habituation paradigms and visual preference methods measure how rates of responsiveness to a stimulus decrease as infants learn or process information across multiple exposures. In this procedure, a visual or auditory stimulus is presented, and the infant's attention to it is measured in terms of either increased looking time (eye gaze), increased sucking frequency, EEG pattern changes, or decreased heart rate (Colombo, 2001; Phelps, 2005). As infants habituate or become familiar with the stimulus, they look away from repeated presentations at faster and faster rates, suck more slowly, or have an increased heart rate. When infants habituate quickly, they are demonstrating efficient information processing.

LINK TO LEARNING

This video demonstrates an infant losing interest (https://openstax.org/r/104LoseInterest) in a toy, known as habituation. Observe the infant's response when the toy is replaced with something new.

What happens if we show an infant two different objects? In the preferential-looking technique, researchers note which object the infant pays attention to, giving insights into their interest and attention. If the choice is between a novel object and a familiar one, infants will typically look longer at and pay greater attention to the novel object (Colombo, 2001; Yu & Smith, 2016). When an infant gets bored and throws a favorite toy aside, they may simply be showing that learning has occurred.

The amount of time it takes infants to process new stimuli is related to later intelligence. Several studies have associated faster habituation with improved performance on intelligence assessments, including reasoning and verbal abilities in early childhood and elementary school (Bornstein & Sigman, 1986; Fagan et al., 2007; Poli et al., 2024; Sigman et al., 1991). Observing infant habituation can also give health-care providers, researchers, and caregivers insights into an infant's speed of processing various sensory information (sight, sound, touch), their learning and memory, and their overall cognitive development (Sicard-Cras et al., 2022). For example, a child who shows slower habituation to visual stimuli (being shown a toy) in comparison to tactile stimuli (holding the toy) may need to have their visual acuity checked.

Sociocultural Theory of Cognitive Development

Lev Vygotsky (1896–1934), who developed his theory around the same time as Jean Piaget, was particularly interested in the role of the social environment and culture in cognitive development and learning. In his sociocultural theory, Vygotsky proposed that children learn about the world and develop cognitively from their interactions with caregivers, other adults, peers, and the culture at large (Vygotsky, 1978). Cultural tools play an important role too and include language, systems of counting, memory techniques, art, writing, maps (Vygotsky, 1998), and, more recently, computers, cell phones, and other modern technology. Like Piaget, Vygotsky assumed children construct their own knowledge, but he made a stronger claim that the cultural and social environments were an inseparable part of learning.

For a child to construct their knowledge and learn, Vygotsky believed, they must be nurtured or guided by more knowledgeable people like adults, older children, or peers, and they must be aware that what they're learning is important. As you recall from 1.3 Major Theories and Theorists, he called this process scaffolding and used the concept of the zone of proximal development to describe how scaffolding can advance cognitive growth in children. During scaffolding, the child's cognitive partner uses language for scaffolding (social speech). Over time, children will begin using their own language as the basis for their cognitive development. They will talk to themselves as they work through a challenge, in what we call private or egocentric speech, aloud at first but then silently. For example, a child learning to put together a puzzle may mutter, "First, find the corner and edge pieces." But as their puzzle experience grows, they may simply mentally remind themselves of that step. In short, they have internalized the skills acquired through scaffolding and can now independently demonstrate a new skill or knowledge.

Language isn't the only means of guiding young children's learning, since children also learn by observing others and copying their behaviors. The learning process may also include **social referencing**, the use of information from others to determine how to respond to a situation (Ehli et al., 2020). For example, an infant may use an adult's facial expression, such as a stern look, as a social reference before climbing over the baby gate (or not). A caregiver can also guide an infant's learning indirectly by placing toys nearby for the child to explore. If the infant seems unsure, the parent can use facial expressions and tone to show their feelings about the toy.

Variations in Cognitive Development

Recall the reliance on WEIRD (White, educated, industrialized, rich, and democratic) samples for much of the research on child development. The theories of cognitive development you've just studied were developed by studying middle-class children in WEIRD cultures. However, the cognitive development of young children is influenced by many variables, including environmental and cultural influences.

Culture

Even before birth we are immersed in culturally shaped environments. Families and others in the home frame our exposure to language, values, and norms and transmit culture through daily interactions. Family traditions, values and expectations, religious practices, holidays and celebrations, and exposure to education and the media bring specific knowledge and experiences to the child. For example, adults in the non-Western indigenous community of Vanuatu emphasize physical contact with infants more than visual, face-to-face contact, which is emphasized in Western cultures such as the United States (Little et al., 2016).[4] In rural Africa, Kipsigi mothers carry their infants on their backs most of the day (Super & Harkness, 2002). This close body contact gives infants time to observe what their parents are doing, influencing their cognitive and emotional development (Bánovský, 2023).

Socioeconomic Influences

Family socioeconomic status (SES) can also play a role in early cognitive development. Together, factors like caregiver education and family access to resources have consistently been found to influence cognitive development, including language, memory, and executive functions (Blair & Raver, 2016; Farah et al., 2006; Weisleder & Fernald, 2013).

Children from families of low-SES consistently score lower than others on measures of cognitive ability and academic achievement (Lurie et al., 2021). Their families often have less access to educational resources, and poverty has been shown to harm the developing brain by increasing stress and reducing opportunities (Blair & Raver, 2016; Tarullo et al., 2020). But the way in which SES influences cognitive development is complicated.

Socioeconomic status is associated with access to books, exposure to environmental hazards, language exposure, the quality of parent-infant interactions, and parental warmth and sensitivity. Mothers with higher SES are more likely to have healthier lifestyle habits during pregnancy, smoke less, and exhibit less sedentary behavior (Larranaga et al., 2013). Parents with lower SES may be less confident in their parenting skills (Liu et al., 2020). The level of maternal education, an important component of SES, is one of the strongest predictors of child development (Pace et al., 2017), likely because it is strongly associated with other resources that affect child development, such as financial security, family structure, and maternal depression (Jackson et al., 2017).

What can we do to protect children in families with lower SES? We know high-quality early childhood care and education can provide many benefits (Davis & Dunn, 2022). Interventions that support parents and give them strategies for interacting with their infants at home can also be helpful (Company-Cordoba et al., 2021).

Home Environment

Home is where young children typically spend most of their time. Aspects of the home environment include parent-child interaction and support, caregivers' promotion of autonomy, respect for the child, use of rules, and overall home environment quality (Bradley & Caldwell, 1982). A study of Malaysian infants aged twelve to thirteen months showed that infants in a low-quality home environment scored lower on cognitive tests than their peers with higher-quality home environments (Nurliyana et al., 2020). Quality of home environment has been related to cognitive development after one year, through the preschool years, and in later intellectual development (Totsika & Sylva, 2004). In fact, the home environment has been found to be a greater influence on neurodevelopment at eighteen months than SES and maternal IQ (Ronfani et al., 2015). Ultimately, the quality of infants' experiences within the home can indicate whether any interventions should be targeted to individual families.

References

Baillargeon, R. (1987). Object permanence in 3 1/2–and 4 1/2–month-old infants. *Developmental Psychology, 23*(5), 655–664. https://doi.org/10.1037/0012-1649.23.5.655

Baillargeon, R. (2004). Infants' physical world. *Current Directions in Psychological Science, 13*(3), 89–94. https://doi.org/10.1111/j.0963-7214.2004.00281.x

Bánovský, J. (2023). On the importance of infant carrying for social learning and the development of social cognition. *Philosophical Psychology.* https://doi.org/

4 This study (Little et al., 2016) uses the terms "Western" and "non-Western Indigenous" for its research involving participants in the United States and Vanuatu.

10.1080/09515089.2023.2217211
Blair, C., & Raver, C. C. (2016). Poverty, stress, and brain development: New directions for prevention and intervention. *Academic Pediatrics, 16*(3), S30–S36.
Bornstein, M. H., & Sigman, M. D. (1986). Continuity in mental development from infancy. *Child Development*, *57*(2), 251–274. https://doi.org/10.2307/1130581
Bradley, R. H., & Caldwell, B. M. (1982). The consistency of the home environment and its relation to child development. *International Journal of Behavioral Development*, 5(4), 445–465. https://doi.org/10.1177/016502548200500404
Colombo, J. (2001). The development of visual attention in infancy. *Annual Review of Psychology*, *52*(1), 337–367. https://doi.org/10.1146/annurev.psych.52.1.337
Company–Córdoba, R., Sianes, A., Simpson, I. C., & Ibáñez–Alfonso, J. A. (2021). Cognitive interventions in children and adolescents from low socioeconomic status backgrounds: A systematic review protocol of randomized controlled trials. *Systematic Reviews*, *10*(1), Article 187. https://doi.org/10.1186/s13643-021-01738-x
Courage, M. L., & Cowan, N. (Eds.). (2022). *The development of memory in infancy and childhood.* Psychology Press.
Davis, B., & Dunn, R. (2022). Educators working with infants and toddlers from low socio–economic status families. *Cogent Education, 9*(1), Article 2042988. https://doi.org/10.1080/2331186X.2022.2042988
Diamond, A. (1985). Development of the ability to use recall to guide action, as indicated by infants' performance on AB. *Child Development, 56*(4), 868–883.
Ehli, S., Wolf, J., Newen, A., Schneider, S., & Voigt, B. (2020). Determining the function of social referencing: The role of familiarity and situational threat. *Frontiers in Psychology*, *11*, Article 538228. https://doi.org/10.3389/fpsyg.2020.538228
Ebersbach, M. (2009). Achieving a new dimension: Children integrate three stimulus dimensions in volume estimations. *Developmental Psychology, 45*(3), 877–883. https://doi.org/10.1037/a0014616
Fagan, J. F., Holland, C. R., & Wheeler, K. (2007). The prediction, from infancy, of adult IQ and achievement. *Intelligence, 35*(3), 225–231. https://doi.org/10.1016/j.intell.2006.07.007
Farah, M. J., Shera, D. M., Savage, J. H., Betancourt, L., Giannetta, J. M., Brodsky, N. L., Malmud, E. K., & Hurt, H. (2006). Childhood poverty: Specific associations with neurocognitive development. *Brain Research, 1110*(1), 166–174. https://doi.org/10.1016/j.brainres.2006.06.072
Gopnik, A., & Meltzoff, A. N. (2021). Early semantic developments and their relationship to object permanence, means–ends understanding, and categorization. In *Children's Language* (pp. 191–212). Psychology Press.
Giles, A., & Rovee-Collier, C. (2011). Infant long-term memory for associations formed during mere exposure. *Infant Behavior and Development*, *34*(2), 327–338. https://doi.org/10.1016/j.infbeh.2011.02.004
Hendry, A., Jones, E. J. H., & Charman, T. (2016). Executive function in the first three years of life: Precursors, predictors and patterns. *Developmental Review, 42*, 1–33. https://doi.org/10.1016/j.dr.2016.06.005
Jackson, M. I., Kiernan, K., & McLanahan, S. (2017). Maternal education, changing family circumstances, and children's skill development in the United States and UK. *The ANNALS of the American Academy of Political and Social Science*, *674*(1), 59–84. https://doi.org/10.1177/0002716217729471
Larranaga, I., Santa–Marina, L., Begiristain, H., Machon, M., Vrijheid, M., Casas, M & Fernandez, M.F. (2013). Socio–economic inequalities in Health, habits and self–care during pregnancy in Spain. *Maternal and Child Health Journal, 17*(7), 1315–1324. https://doi.org/10.1007/s10995-012-1134-4
Lascarides, V.C. & Hinitz, B.F. (2011). *History of early childhood education.* Routledge.
Little, E. E., Carver, L. J., & Legare, C. H. (2016). Cultural variation in triadic infant–caregiver object exploration. *Child Development*, *87*(4), 1130–1145. https://doi.org/10.1111/cdev.12513
Liu, T., Zhang, X., & Jiang, Y. (2020). Family socioeconomic status and the cognitive competence of very young children from migrant and non–migrant Chinese families: The mediating role of parenting self-efficacy and parental involvement. *Early Child Research Quarterly, 51*, 229–241. https://doi.org/10.1016/j.ecresq.2019.12.004
Lurie, L. A., Hagen, M. P., McLaughlin, K. A., Sheridan, M. A., Meltzoff, A. N., & Rosen, M. L. (2021). Mechanisms linking socioeconomic status and academic achievement in early childhood: Cognitive stimulation and language. *Cognitive Development*, *58*, Article 101045. https://doi.org/10.1016/j.cogdev.2021.101045
Meltzoff, A. N. (1988). Infant imitation and memory: Nine–month–olds in immediate and deferred tests. *Child Development, 59(1)*, 217–225. https://doi.org/10.2307/1130404
Nurliyana, A. R., Shariff, Z. M., Taib, M. N. M., Gan, W. Y., & Tan, K. A. (2020). Early growth and home environment are associated with cognitive development in the first year of life of Malaysian infants. *Early Human Development, 140*, Article 104890. https://doi.org/10.1016/j.earlhumdev.2019.104890
Occhionero, M., Tonetti, L., Giovagnoli, S., & Natale, V. (2023). The infantile amnesia phenomenon and the beginning of autobiographical memories. *Applied Sciences*, *13*(2), Article 1158. https://doi.org/10.3390/app13021158
Pace, A., Luo, R., Hirsh–Pasek, K. & Golinkoff, R. M. (2017). Identifying pathways between socioeconomic status and language development. *Annual Review of Linguistics, 3*(3), 285–308. https://doi.org/10.1146/annurev-linguistics-011516-034226
Phelps, B. J. (2005). Habituation. In N. J. Salkind (Ed.), *Encyclopedia of human development* (pp. 597–600). Sage Publications.
Piaget, J. (1952). *The origin of intelligence in the child.* New York: International University Press.
Piaget, J. (1954). *The construction of reality in the child.* Basic Books.
Poli, F., Ghilardi, T., Beijers, R., de Weerth, C., Hinne, M., Mars, R. B., & Hunnius, S. (2024). Individual differences in processing speed and curiosity explain infant habituation and dishabituation performance. *Developmental Science, 27*(3), Article e13460. https://doi.org/10.1111/desc.13460
Ronfani, L., Brumatti, L. V., Mariuz, M., Tognin, V., Bin, M., Ferluga, V., Knowles, A., Montico, M., & Barbone, F. (2015). The complex interaction between home environment, socioeconomic status, maternal IQ and early child neurocognitive development: a multivariate analysis of data collected in a newborn cohort study. *PLOS one*, *10*(5), Article e0127052. https://doi.org/10.1371/journal.pone.0127052
Rovee–Collier, C. (1999). The development of infant memory. *Current Directions in Psychological Science, 8*(3), 80–85. https://doi.org/10.1111/1467-8721.00019
Rovee-Collier, C., & Giles, A. (2010). Why a neuromaturational model of memory fails: Exuberant learning in early infancy. *Behavioural Processes*, *83*(2), 197–206. https://doi.org/10.1016/j.beproc.2009.11.013
Sicard–Cras, I., Rioualen, S., Pellae, E., Misery, L., Sizun, J., & Roué, J. M. (2022). A review of the characteristics, mechanisms and clinical significance of habituation in fetuses and newborn infants. *Acta Paediatrica*, *111*(2), 245–258. https://doi.org/10.1111/apa.16115
Sigman, M., Cohen, S. E., Beckwith, L., Asarnow, R., & Parmelee, A. H. (1991). Continuity in cognitive abilities from infancy to 12 years of age. *Cognitive Development, 6*(1), 47–57. https://doi.org/10.1016/0885-2014(91)90005-X
Super, C. M., & Harkness, S. (2002). Culture structures the environment for development. *Human Development, 45*(4), 270–274. https://doi.org/10.1159/000064988
Tarullo, A. R., Tuladhar, C. T., Kao, K., Drury, E. B., & Meyer, J. (2020). Cortisol and socioeconomic status in early childhood: A multidimensional assessment. *Development and Psychopathology*, *32*(5), 1876–1887. https://doi.org/10.1017/S0954579420001315
Totsika, V., & Sylva, K. (2004). The home observation for measurement of the environment revisited. *Child and Adolescent Mental Health*, *9*(1), 25–35. https://doi.org/10.1046/j.1475-357x.2003.00073.x
Weisleder, A., & Fernald, A. (2013). Talking to children matters: Early language experience strengthens processing and builds vocabulary. *Psychological Science, 24*(11), 2143–2152. https://doi.org/10.1177/0956797613488145
Woodward, A., & Needham, A., (Eds). (2009). *Learning and the infant mind.* Oxford University Press.
Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). Harvard University Press.
Vygotsky, L.S. (1998). *The collected works of L.S. Vygotsky, Volume 5, Child Psychology.* Plenum Press.
Yu, C., & Smith, L. B. (2016). The social origins of sustained attention in one–year–old human infants. *Current Biology, 26*(9), 1235–1240. https://doi.org/10.1016/j.cub.2016.03.026

3.5 Language in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the differences between language and communication
- Identify the features of language and language development
- Describe the milestones of language development in infancy and toddlerhood
- Compare the major theories of language development
- Identify factors that influence language development

Six-month-old Ibrahim has just woken from his nap, and his father Ahmed hears him babbling “da da da da”

over the intercom. At first Ahmed is excited because it sounds like the baby is calling him. However, as he listens, he begins to wonder whether this is just another example of the babbling he first heard last week, when Ibrahim was saying "ba ba ba." As he lifts his son out of his crib, Ahmed expresses his delight in seeing Ibrahim and begins to have a conversation with him in a higher-than-normal pitch. He narrates everything he is doing while changing his son's diaper, and Ibrahim smiles as he talks and resumes babbling when he pauses. Father and son are both fully enjoying their conversation. Babbling and turn taking are just a couple of the important milestones in the development of language that Ibrahim will be achieving during his first two years of life.

Language development is a complex process influenced by both nature and nurture. As infants progress through their first year of life, they develop the components of language at a remarkable pace, laying the foundation for building more complex language abilities in the years to come.

Language and Communication

Although language and communication are part of our daily life, when asked, "What is language?" you might struggle to answer.

A communication system that uses words and rules to allow the transmission of information between individuals is **language**. Language can be spoken, written, or signed to communicate ideas to others, called *productive language*, or to comprehend ideas from others, called *receptive language.* We can also communicate without language, such as through gestures, facial expressions, body language, and sound. Language differs from these means, however, in having a set of systematic rules, such as grammar and spelling, and having **infinite generativity**, the capacity to create an unlimited number of meaningful messages. For example, if you were given the sentence, "Lifespan development is useful in your life," you could convey that same message an infinite number of ways, such as by saying, "This class has so many life hacks!" or "Lifespan comes with a lot of useful tips!"

Features of Language

The main features of language include phonemes, morphemes, syntax, grammar, semantics, and pragmatics. Children (and all people) use all these features to communicate with others and learn language. You'll learn about syntax, grammar, semantics, and pragmatics, which emerge in early childhood, in 5.4 Language in Early Childhood. For now, consider some of the smallest parts of language, phonemes and morphemes. A **phoneme** is the smallest unit of sound within a language. The sounds of the alphabet are phonemes, as are letter combinations that make a single sound like *sh*, *er*, and *oo*. For example, in the word "cats", the phonemes are /c/ /a/ /t/ /s/. All languages have phonemes but in different numbers; English has about forty-four. Phonemes alone typically don't convey any meaning, but once children learn phoneme sounds, they can combine them to create and comprehend meaning.

Another feature of language is a **morpheme**, the smallest meaningful units of language. Morphemes can be individual words, roots, prefixes, or suffixes. For example, *mama, dogs, homework,* and *you* are morphemes. Some words contain more than one morpheme. *Dogs* contains two: *dog* and *s.* Prefixes and suffixes like *re-* and *-ed* also serve as morphemes because they convey meaning. For example, the word *redesigned* consists of three morphemes: the root word *design*, the prefix *re* which means to do again, and the suffix *ed* meaning the action occurred in the past.

Contextual cues like tone of voice, body movements, and word emphasis also carry meaning and aid communication in all languages. For example, a toddler saying "dada" while crying as the father is leaving the room is expressing a different meaning than when saying "dada" and smiling when the father returns. We can also be more confident an infant understands phonemes when they look at "dada" and smile, as opposed to just making the sound *dada* by accident in a string of other sounds.

LINK TO LEARNING

In this video Patricia Kuhl shares findings (https://openstax.org/r/104Language) about how babies learn one language over another.

Language and Communication Milestones

Infants and toddlers typically progress through several milestones in communication and language development, beginning with crying, cooing, babbling, and gestures before transitioning into using single words, two-word phrases, and finally full patterned speech.

Crying and Cooing

Newborns come equipped with their very first communication tool: crying. Crying allows infants to signal distress (Vermillet et al., 2022), and some research indicates their cries have different sounds and features that can help caregivers identify the type of distress and what the baby needs (Ji et al., 2021). For example, one cry might indicate the baby needs to burp to relieve pain, while another may indicate tiredness and a need for sleep.

During interactions and daily experiences, infants are also taking in sounds, rhythms, and language cues. By two months of age, they are making facial expressions and smiling during social exchanges, and they also start **cooing**, the deliberate generation of vowel sounds such as "oooo, aaaaa, uh" and gurgling sounds that serve as practice vocalization. An infant may coo to entertain themselves or to respond to others: The infant coos, the caregiver responds verbally, the infant coos in response. This interaction is an early lesson in the art of turn taking in conversation and most often occurs with a caregiver.

Babbling

Beginning around four to six months of age, with more experience and improving motor and brain development, infants begin to repeat consonant-vowel sounds like na and ba, called **babbling**. Typical consonant sounds in early babbling include /g/, /k/, /m/, /n/, /p/, /b/, and /d/. These are fairly universal no matter what language is spoken around the infant. However, infants quickly become more sensitive to what they are hearing and begin to use the phonemes in the language(s) to which they are regularly exposed (Plummer & Beckman, 2015). Some sounds they were making will disappear if they don't hear them consistently.

Although caregivers often mistake early babbling for first words, *ba-ba* does not necessarily mean bottle at this stage. The infant has not yet tied their vocalizations to any meaning, and babbling can be just experimental sound making. Babbling can happen without sound too. Children who are deaf and those exposed to sign language may also babble by making hand movements to represent language (Laing & Bergelson, 2020; Lillo-Martin & Henner, 2021). Infants who babble more around six months also tend to have more productive language at twelve months (Werwach et al., 2021).

Gesturing

As early as seven months of age, infants may begin gesturing with hands and body to communicate, such as by shaking the head for "No" and waving the hands for "Goodbye" (Figure 3.20) (Crais et al., 2004). Because gesturing may be easier than saying words, caregivers can teach some simple gestures to enhance communication. Some even use this time as an opportunity to teach hearing children some sign language, such as the American Sign Language signs for "milk" or "food."

(a) (b)

FIGURE 3.20 The use of gestures, such as (a) pointing and (b) waving, is an aspect of communication that develops during the first year and aids in the development of language and parent-child interactions. (credit a: modification of work "Found a snail!" by Donnie Ray Jones/Flickr, CC BY 2.0; credit b: "Waving" by Kerry Ceszyk/Flickr, CC BY 4.0)

At around age nine months to a year, infants use their own gaze or a pointing gesture during interactions with adults to focus others on items around them (Baldwin, 2014). When adults respond by labeling or discussing the objects, receptive and productive language development are improved, and vocabulary development is enhanced. For example, an infant may point to a novel object and look at their caregiver quizzically. The caregiver's response of naming the object, such as "That's a flower," can further support the infant's growing language awareness and address their curiosity.

IT DEPENDS

Should Caregivers Use "Baby Signing" with Infants

A growing trend among caregivers is to use baby sign language to help infants communicate their needs before they can vocalize words. Baby sign language is a simplified form of American Sign Language with only a small subset of signs and no grammar rules. Babies start attending to signs as early as four months of age (Novack et al., 2022) and by six to eight months can learn to ask for basic needs such as milk or a diaper change.

The practice can be a fun way to engage with infants, who may be less fussy if they can communicate basic needs, but research does not indicate it will enhance language and cognitive development (Kirk et al., 2013). Some in the Deaf and hard-of-hearing community have also expressed concern about hearing individuals using and modifying language intended for their community. Baby signing is not language, because it is missing the syntax, morphology, and pragmatics that make American Sign Language a full language (De Meulder, 2019). With that understanding, however, teaching babies a few signs in the first year of life may improve their ability to communicate and help parents respond to their needs (Kirk et al., 2013).

First Words and Holophrases

Words are linguistic symbols that refer to an object, event, descriptor, or action, and learning what they mean is part of our language development. In terms of receptive language, infants can comprehend many more words than they can speak. They can recognize names of many common objects as early as six months (Bergelson & Swingley, 2012). One estimate is that children can produce thirty to ninety words around eighteen months of age but understand so many that it is difficult if not impossible to measure the number (Vehkavuori et al., 2021).

Some children say their first word as early as nine months of age, but around twelve months is typical. The first word of a child who speaks English is often a noun, like *cup, ball, mama, dada, dog, cat,* or the name of another

person or object the child regularly interacts with (Clerkin & Smith, 2022; Nelson, 1974). In a verb-friendly language such as Chinese or Korean, children may learn more verbs and be taught to notice actions and relationships between objects (Yee, 2020).

When babies use one word to convey a complete thought, that word is called a **holophrase**. For example, "No" might really mean, "I don't want that right now!" and "Ball" might mean, "Where is the ball?" or "Give me the ball." The caregiver can rely on other communication cues to pick up the meaning of these holophrases.

Young children learning words make a common error called **overextension**, the use of a learned word to inappropriately name something else. This often happens when a child doesn't have another word to use. For example, a child might call a tiger a kitty. Young children may also exhibit **underextension**, the inappropriate restriction of a word. For example, a child might call a pet cat "kitty" but not refer to any other cats as "kitty."

Toddlers are still learning how to produce and coordinate the complex movements needed in speech, and the necessary muscles and nerves are still developing. In fact, many children don't acquire all the English consonant sounds until five or six years of age (Crowe & McLeod, 2020). Thus, they also make pronunciation errors. For example, they may mistakenly interchange sounds like /b/ and /d/, or /c/ and /z/ (Shahid et al., 2021). They also tend to simplify words (Syafitri, 2021). For example, they may say "wabbit" instead of "rabbit" or "nana" instead of "banana," opting for sounds that are easier for them to articulate. They may omit consonant sounds at the beginning or end of words or reverse sounds, such as by saying "pasghetti" for "spaghetti." These errors are a normal part of the language development process, and most children outgrow them with practice. Severe or persistent errors may be a sign of a speech or language disorder, however, and should be evaluated by a speech-language pathologist (Preston et al., 2013).

Telegraphic Speech

By eighteen to twenty-four months of age, children are starting to combine words into short sentences. Shortened word utterances that convey meaning but do not rely on grammar rules are called **telegraphic speech**. For example, a child might say "More cookie" to indicate that they want more cookies or "Go papa house" to indicate they would like to go to grandpa's house. Telegraphic speech doesn't rely on grammar and often eliminates little words like "a" and "the." The name was coined in the 1960s because this speech is similar to telegraph messages. Had it been identified today, it might be called text talk.

Vocabulary Expansion

Around sixteen to twenty-four months of age, children experience a vocabulary growth spurt and start learning new words at an accelerated rate. By about two years old, a toddler uses between fifty and 200 words; by three years old they have a vocabulary of up to 1,000 words and can speak in sentences.

Children go through what some call a "naming explosion" in which they learn several new words a week, showing impressive progress in receptive and productive language development. They learn new words by quickly connecting those they encounter and their meanings, a process often called **fast mapping** (Jackson et al., 2019; Landau et al., 1988; Markman & Wachtel, 1988). Table 3.10 summarizes the language milestones that occur over the first two years of life.

Age	Language and Communication Skills
Birth	Newborns cry to communicate distress.
2 months	Infants coo as they begin to practice vocalizations.

TABLE 3.10 Summary of Infant and Toddler Language Milestones

Age	Language and Communication Skills
4–6 months	Infants begin babbling and include consonant sounds or hand signs. Infants pay attention to communication from others and may recognize their own name.
7–9 months	Infants begin gesturing and include the hands and body to communicate.
9–12 months	Infants first words and holophrases appear.
16–24 months	Toddler telegraphic speech and vocabulary expansion begin.

TABLE 3.10 Summary of Infant and Toddler Language Milestones

Major Theories of Language Development

How do very young children learn to communicate and use language? This section reviews some of the major theories of language acquisition: nativist, learning, and interactionist approaches.

The **nativist approach** takes a biological perspective, asserting that humans are born with the innate ability to learn language and that experience plays a very limited role. Noam Chomsky (1968) hypothesized a Language Acquisition Device (LAD) that is uniquely human and predisposes us to learn language. This view asserts that our brains allow us to analyze language to learn its rules quickly and efficiently.

Neurodevelopmental research has found that the brain is indeed wired for language at birth. In experiments that played different sounds to newborns, the left hemisphere of the brain was found to be more active in response to native language sounds, while the right responds more to non-native language sounds (Vannasing et al., 2016). What Chomsky called a LAD may actually be Broca's and Wernicke's areas in the brain's left hemisphere. Broca's area is specialized for language production and Wernicke's area for language comprehension (Figure 3.21).

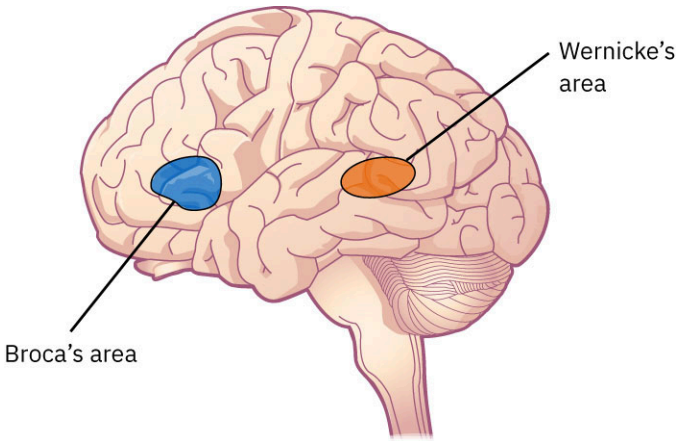


FIGURE 3.21 In the left hemisphere of the brain, Broca's area is specialized for language production and Wernicke's area for language comprehension. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The brain clearly is critical for the development of language, but it does not tell the whole story. Other early language theories claimed learning and experience are critical, and that language is learned through social interactions. Thus, the **learning approach** to language development highlights the contribution of caregivers. One influential learning theorist, B.F. Skinner (1957), believed we learn language through operant conditioning. That is, as infants begin making random sounds, parents respond with interest, attention, and

excitement that reinforce the infants' vocalizations. For example, if a child says "mama," a mother may smile and repeat the word back, encouraging the infant to repeat the sounds. Similarly, other learning theorists believed infants learn language by observing and imitating the language use of others (Bandura, 1989). Although evidence shows caregivers are indeed critical for language development, learning theories alone cannot explain language development.

According to the **interactionist approach**, language development occurs as the result of complex interactions between the biological readiness of children and the environment in which they are raised, and language exists primarily for the purpose of communication during social interactions. In newer approaches to language theory, researchers recognize that humans have biological resources that facilitate language learning, and that language is supported by environmental influences, including enriching social interactions (Brunner, 1983; Tomasello, 2003).

Support for the role of social interactions comes from research demonstrating that toddlers learn vocabulary better from face-to-face social interactions than from videos (Troseth et al., 2018). When language is presented on a screen, infants learn better in the presence of other infants (Lytle et al., 2018). It is more difficult for infants to fully experience the social cues needed to attract and keep their attention on a screen, and research has shown that screen time is associated with difficulties in learning social skills and reading emotions. We also know that when infants spend more time watching media, they spend less time talking and interacting with their caregivers, which can slow later vocabulary growth (Brushe et al., 2024; Kucker et al., 2024).

Influences on Language Development

Regardless of the theory of language development, a variety of biological and environmental factors influence language development. These include universal listening, caregiver influence, and different styles of toddler expressiveness.

Despite significant differences in parenting styles, living situations, and degrees of socialization, infants in different cultures achieve language development milestones at about the same ages, suggesting biological influences on language development. Research on language and sound perception found that infants may begin as **universal listener**, able to hear and distinguish the unique sounds within their native language as well as in non-native languages. However, by ten to twelve months of age, the ability to distinguish sounds outside their own language diminishes as their brains become specialized to respond to the sounds that are part of their native language (Ortiz-Mantilla et al., 2019; Werker & Tees, 1984). This loss of universal listening is also reflected in changes in their babbling patterns as they focus on producing sounds in the language(s) they are learning (Maneva & Genesee, 2002; Morgan & Wren, 2018).

LINK TO LEARNING

Before the age of one year, infants can discriminate between the sounds of their languages. As our brains develop and unused synapses are pruned, we lose this ability. Watch a young infant demonstrate their ability to discriminate (https://openstax.org/r/104Discriminate) between very similar sounds.

A strong link also exists between caregivers and language development. When many adults and even older children interact with infants and toddlers, their speech naturally changes in a way that attracts and keeps an infant's attention. Such **child-directed speech** is distinguished by sing-song rhythm and higher pitch, more repetition, and the use of simple words (Farran et al., 2016). It also employs exaggerated vowel and consonant sounds and more facial expressions. Words are highly articulated and larger pauses are made between words so the child can hear the individual sounds. Infants attend to and listen longer to child-directed speech than to normal speech (Werker et al., 1994) and prefer it over adult-directed speech, even as newborns (Cooper et al., 1997; Many Babies Consortium, 2020). Children who hear child-directed speech learn words more rapidly than children who do not (Shi et al., 2022).

Children whose caregivers are more responsive to their vocalizations also tend to have larger vocabularies (Madigan et al., 2019; Vallotton et al., 2017). Parents can also help young children develop an understanding of grammar rules by modeling correct grammar in response to grammatical errors by the child. Two ways to do this are recasting and expansion (Cleave et al., 2015). For example, if a child says, "Her want toy," the adult may recast the statement as a question with correct grammar: "Does she want your toy?" In expansion the adult keeps the basic structure of the child's words and corrects semantic issues. The child might say, "Him is silly," and the adult responds with, "He is silly." This manner of modeling correct grammar for young children is associated with the development of better expressive language.

LIFE HACKS

Helping Infants Learn Language and Communicate

Caregivers play a critical role in language development for their infants. Here are some tips for maximizing the development of language:

- Take turns: When an infant coos at you, make the sound in return. Pause to allow them to respond.
- Make some noise: Interact with infants by talking about what you are doing, reading to them, or naming objects you are both looking at.
- Pay attention: If an infant or toddler points or gestures to something, teach them the word by saying or signing the name of the object.
- Exchange gestures: Encourage hellos and goodbyes, and give praise when toddler tries to speak with others.
- Consider using signs: If an infant wants to communicate their needs but cannot make the sounds of language, you can say a word and/or sign the word (such as "food" or "sleep") to help them communicate what they feel (like hunger or fatigue).

Researchers have also identified two styles of toddler language. When using a **referential style**, toddlers more frequently talk about objects and things, while the **expressive style**, often used for social reasons, expresses feelings and needs. Children who use a referential style when talking like to have adults label objects in their environment or in books, whereas children who use an expressive style are interested in using language to communicate or just to be social. Some research has shown stronger patterns of referential speech among U.S. children whose mothers label objects when conversing with them, and more use of the expressive style for children with Korean mothers who emphasize actions and social routines when conversing with their child (Sung & Hsu, 2009). Expressive communication is useful in the context of social interactions, as when infants are encouraged to greet others by waving. This style of communication directs the child's attention toward other individuals rather than toward things (Ashtari et al., 2020).

Variations in Language Development

Language development may sometimes follow a different pathway than described, due to developmental or environmental differences. These include the influence of impoverished environments, intervention and prevention with at-risk children, and bilingual and multilingual environments.

The quality of the environment influences language learning. For example, at the end of the twentieth century, many children in Romania were separated from their families and raised in impoverished orphanages where they experienced substantial neglect. These children showed significant language delays along with delays in cognition and motor development and deficits in socioemotional behaviors. Many could not produce intelligible words at 2.5 years old (Windsor et al., 2007). When Romanian dictator Nicolae Ceauşescu was overthrown and the plight of the children was discovered, many were moved into foster care as part of a large study on the impact of neglect on child development. Given careful and evidence-based intervention, they showed significant improvement in their language and other areas of development (Nelson et al., 2009). While stress and adversity are known to increase risks in child development, resilience can be promoted in language

and overall development through early intervention and prevention, such as in individualized care and foster care (Humphreys et al., 2022).

Intervention and prevention strategies can also promote language development by improving parent-child reading strategies. For example, some research indicates that children from a low-SES background are exposed to less reading time and fewer interactive reading strategies (Barnes & Puccioni, 2017; Hoff, 2013). Parents can be taught the skills and knowledge needed to read effectively with their children, however, and increasing their motivation to do so improves their children's later academic achievement in school (Peixoto et al., 2022). Effective interventions include such parent education and outreach by support agencies, as well as community-based programs like reading buddies, story hours at libraries, and access to books through organizations like Dolly Parton's Imagination Library.

LINK TO LEARNING

Interventions that provide children with access to books early in life can improve literacy and academic outcomes. Dolly Parton's Imagination Library (https://openstax.org/r/104ImaginLib) gives books to millions of children from birth to age five years in five different countries.

Multilingualism is common in many parts of the world and is on the rise in the United States. Parents often have questions about the advantages or disadvantages of raising multilingual children. Over time, children learning more than one language from birth become proficient in each and achieve language milestones around the same time as young children learning only one language (Albareda-Castellot et al., 2011; Festman et al., 2017). When learning a second (or third) language after becoming fluent in the first, children often need more time to reach proficiency in the additional language(s) (Baker, 2011).

Children sometimes combine elements of different languages such as English and Spanish when communicating. Although it may seem they are confused, research shows that bilingual infants are able to discriminate between their two languages (Byers-Heinlein & Lew-Williams, 2013). Since children are born ready to learn languages, caregivers should feel comfortable exposing children to more than one language.

References

Albareda–Castellot, B, Pons, F, & Sebastián–Gallés, N. (2011). The acquisition of phonetic categories in bilingual infants: New data from an anticipatory eye movement paradigm. *Developmental Science*, 14, 395–401. https://doi.org/10.1017/S1366728919000348

Ashtari, A., Samadi, S. A., Yadegari, F., & Ghaedamini Harooni, G. (2020). The relationship between Iranian maternal verbal responsiveness styles and child's communication acts with expressive and receptive vocabulary in 13–18 months old typically developing children. *Early Child Development and Care*, *190*(15), 2392–2401. https://doi.org/10.1080/03004430.2019.1573227

Baker, C. (2011). *Foundations of bilingual education and bilingualism.* McNaughton & Gunn.

Baldwin, D. A. (2014). Understanding the link between joint attention and language. *Joint attention.* (pp. 131–158). Psychology Press.

Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), *Annals of child development: Six theories of child development* (Vol. 6, pp. 1–60) Greenwich, CT: JAI Press

Barnes E., & Puccioni J. (2017). Shared book reading and preschool children's academic achievement: Evidence from the early childhood longitudinal study—birth cohort. *Infant and Child Development*, *26*(6), Article e2035. https://doi.org/10.1002/icd.2035

Bergelson, E., & Swingley, D. (2012). At 6–9 months, human infants know the meanings of many common nouns. *Proceedings of the National Academy of Sciences*, *109*(9), 3253–3258. https://doi.org/10.1073/pnas.1113380109

Bruner, J. (1983). Play, thought, and language. *Peabody Journal of Education*, *60*(3), 60–69.

Brushe, M. E., Haag, D. G., Melhuish, E. C., Reilly, S., & Gregory, T. (2024). Screen time and parent-child talk when children are aged 12 to 36 months. *JAMA Pediatrics*, *178*(4), 369–375. https://jamanetwork.com/journals/jamapediatrics/fullarticle/2815514

Byers–Heinlein, K., & Lew-Williams, C. (2013). Bilingualism in the early years: What the science says. *LEARNing landscapes*, *7*(1), 95. https://doi.org/10.36510/learnland.v7i1.632

Chomsky, N. (1968). Language and mind. New York: Harquort, Brace and World.

Cleave, P. L., Becker, S. D., Curran, M. K., Van Horne, A. J., & Fey, M. E. (2015). The efficacy of recasts in language intervention: A systematic review and meta–analysis. *American Journal of Speech-Language Pathology*, *24*(2), 237–255. https://doi.org/10.1044/2015_AJSLP-14-0105

Clerkin, E. M., & Smith, L. B. (2022). Real-world statistics at two timescales and a mechanism for infant learning of object names. *Proceedings of the National Academy of Sciences, 119*(18), Article e2123239119. https://doi.org/10.1073/pnas.2123239119

Cooper, R.P., Abrahan, J., Berman, S., & Staska, M. (1997). The development of infants' preference for motherese. *Infant Behavior and Development, 20*(4), 477–488. https://doi.org/10.1016/S0163-6383(97)90037-0

Crais, E., Douglas, D. D., & Campbell, C. C. (2004). The intersection of the development of gestures and intentionality. *Journal of Speech, Language, and Hearing Research, 47*(3), 678–694. https://doi.org/10.1044/1092-4388(2004/052)

Crowe, K., & McLeod, S. (2020). Children's English consonant acquisition in the United States: A review. *American Journal of Speech-Language Pathology*, *29*(4), 2155–2169. https://doi.org/10.1044/2020_AJSLP-19-00168

De Meulder, M. (2019). " So, why do you sign?" Deaf and hearing new signers, their motivation, and revitalisation policies for sign languages. *Applied Linguistics Review*, *10*(4). https://doi.org/10.1515/applirev-2017-0100

Farran, L. K., Lee, C.–C., Yoo, H., & Oller, D. K. (2016). Cross-cultural register differences in infant-directed speech: An initial study. *PLOS ONE, 11*(3), Article e0151518. https://doi.org/10.1371/journal.pone.0151518

Festman, J., Poarch, G. J., & Dewaele, J. M. (2017). *Raising multilingual children* (Vol. 23). Multilingual Matters.

Hoff, E. (2013). Interpreting the early language trajectories of children from low-SES and language minority homes: implications for closing achievement gaps. *Developmental Psychology*, *49*(1), 4–14. https://doi.org/10.1037/a0027238

Humphreys, K.L., King, L.S., Guyon-Harris, K.L., Sheridan, M.A., McLaughlin, K.A., Radulescu, A., Nelson, C.A., Fox, N.A., & Zeanah, C.H. (2022). Foster care leads to sustained cognitive gains following severe early deprivation. *PNAS, 119*(38), Article e2119318119. https://doi.org/10.1073/pnas.2119318119

Jackson, E., Leitão, S., Claessen, M., & Boyes, M. E. (2019). Fast mapping short and long words: Examining the influence of phonological short-term memory and receptive vocabulary in children with developmental language disorder. *Journal of Communication Disorders, 79*, 11–23. https://doi.org/10.1016/

j.jcomdis.2019.02.001
Ji, C., Mudiyanselage, T. B., Gao, Y., & Pan, Y. (2021). A review of infant cry analysis and classification. *EURASIP Journal on Audio, Speech, and Music Processing, 2021*(1), Article 8. https://doi.org/10.1186/s13636-021-00197-5
Kirk, E., Howlett, N., Pine, K. J., & Fletcher, B. C. (2013). To sign or not to sign? The impact of encouraging infants to gesture on infant language and maternal mind–mindedness. *Society for Research in Child Development, 84*(2), 574–90. https://doi.org/10.1111/j.1467-8624.2012.01874.x
Kucker, S. C., Perry, L. K., & Barr, R. (2024). Variability and patterns in children's media use and links with language development. *Acta Paediatrica*, *113*(5), 1032–1039. https://doi.org/10.1111/apa.17100
Laing, C., & Bergelson, E. (2020). From babble to words: Infants' early productions match words and objects in their environment. *Cognitive psychology, 122*, Article 101308. https://doi.org/10.1016/j.cogpsych.2020.101308
Landau, B., Smith, L. B., & Jones, S. S. (1988). The importance of shape in early lexical learning. *Cognitive Development*, *3*(3), 299–321. https://doi.org/10.1016/0885-2014(88)90014-7
Lillo–Martin, D., & Henner, J. (2021). Acquisition of sign languages. *Annual Review of Linguistics*, *7*, 395–419. https://doi.org/10.1146/annurev-linguistics-043020-092357
Lytle, S. R., Garcia–Sierra, A., & Kuhl, P. K. (2018). Two are better than one: Infant language learning from video improves in the presence of peers. *PNAS Proceedings of the National Academy of Sciences of the United States of America, 115*(40), 9859–9866. https://doi.org/10.1073/pnas.1611621115
Madigan, S., Prime, H., Graham, S. A., Rodrigues, M., Anderson, N., Khoury, J., & Jenkins, J. M. (2019). Parenting behavior and child language: A meta–analysis. *Pediatrics*, *144*(4), Article e20183556. https://doi.org/10.1542/peds.2018-3556
Maneva, B., & Genesee, F. (2002). Bilingual babbling: Evidence for language differentiation in dual language acquisition. *Boston University Conference on Language Development 26, Proceedings*. Somerville, MA: Cascadilla Press.
Many Babies Consortium. (2020). Quantifying sources of variability in infancy research using the infant-directed speech preference. *Advances in Methods and Practices in Psychological Science, 3*(1), 24–52. https://doi.org/10.1177/2515245919900809
Markman, E. M., & Wachtel, G. F. (1988). Children's use of mutual exclusivity to constrain the meanings of words. *Cognitive Psychology*, *20*(2), 121–157. https://doi.org/10.1016/0010-0285(88)90017-5
Morgan, L., & Wren, Y. E. (2018). A systematic review of the literature on early vocalizations and babbling patterns in young children. *Communication Disorders Quarterly*, *40*(1), 3–14. https://doi.org/10.1177/1525740118760215
Nelson, K. (1974). Concept, word, and sentence: Interrelations in acquisition and development. *Psychological Review*, *81*(4), 267. https://doi.org/10.1037/h0036592
Nelson, C. A., Furtado, E. A., Fox, N. A., & Zeanah, C. H. (2009). The deprived human brain: Developmental deficits among institutionalized Romanian children—and later improvements—strengthen the case for individualized care. *American Scientist*, *97*(3), 222–229. https://doi.org/10.1511/2009.78.222
Novack, M. A., Chan, D., & Waxman, S. (2022). I see what you are saying: Hearing infants' visual attention and social engagement in response to spoken and sign language. *Frontiers in Psychology, 13*, Article 896049. https://doi.org/10.3389/fpsyg.2022.896049
Ortiz–Mantilla, S., Realpe–Bonilla, T., & Benasich, A. A. (2019). Early interactive acoustic experience with non-speech generalizes to speech and confers a syllabic processing advantage at 9 months. *Cerebral Cortex, 29*(4), 1789–1801. https://doi.org/10.1093/cercor/bhz001
Peixoto, C., Cadima, J., & Leal, T. (2022). Mothers' educational level and literacy beliefs: Associations with home literacy experiences. *International Journal of Early Years Education*, *30*(2), 167–183. https://doi.org/10.1080/09669760.2022.2025580
Plummer, A. R., & Beckman, M. E. (2015). Framing a socio–indexical basis for the emergence and cultural transmission of phonological systems. *Journal of Phonetics*, *53*, 66–78. https://doi.org/10.1016/j.wocn.2015.09.004
Preston, J. L., Hull, M., & Edwards, M. L. (2013). Preschool speech error patterns predict articulation and phonological awareness outcomes in children with histories of speech sound disorders. *American Journal of Speech–Language Pathology*, *22*(2), 173–184. https://doi.org/10.1044/1058-0360(2012/12-0022)
Shahid, M. A., Syed, A. F., Razi, S. K. A., Sajid, S., & Hussain, I. (2021). Phonological process in toddlers'' single–word production: An explorative study of alveolar sounds in English. *Journal of English Language Teaching and Applied Linguistics*, *3*(3), 51–58. https://doi.org/10.32996/jeltal.2021.3.3.7
Shi, J., Gu, Y., & Vigliocco, G. (2022). Prosodic modulations in child–directed language and their impact on word learning. *Developmental Science, 26(4),* Article 13357. https://doi.org/10.1111/desc.13357
Skinner B.F. (1957). *Verbal behavior.* New York: Appleton–Century–Crofts.
Sung, J., & Hsu, H. (2009). Korean mothers' attention regulation and referential speech: Associations with language and play in 1–year–olds. *International Journal of Behavioral Development*, *33*(5), 430–439. https://doi.org/10.1177/0165025409338443
Syafitri, B. A. (2021, April). From perception to production: An analysis of first language acquisition in 2.5 Years old toddler speech. *English Language and Literature International Conference (ELLiC) Proceedings* (Vol. 4, pp. 307–312).
Tomasello, M. (2003). Constructing a language: A usage-based theory of language acquisition. Cambridge, MA: Harvard University Press.
Troseth, G. L., Strouse, G. A., Verdine, B. N., & Saylor, M. M. (2018). Let's chat: On–screen social responsiveness is not sufficient to support toddlers' word learning from video. *Frontiers in Psychology, 9*, 2195. https://doi.org/10.3389/fpsyg.2018.02195
Vannasing, P., Florea, O., González-Frankenberger, B., Tremblay, J., Paquette, N., Safi, D., Wallois, F., Lepore, F., Béland, R., Lassonde, M., & Gallagher, A. (2016). Distinct hemispheric specializations for native and non-native languages in one-day-old newborns identified by fNIRS. *Neuropsychologia*, *84*, 63–69. https://doi.org/10.1016/j.neuropsychologia.2016.01.038
Vallotton, C. D., Mastergeorge, A., Foster, T., Decker, K. B., & Ayoub, C. (2017). Parenting supports for early vocabulary development: Specific effects of sensitivity and stimulation through infancy. *Infancy, 22*(1), 78–107. https://doi.org/10.1111/infa.12147
Vehkavuori, S. M., Kämäräinen, M., & Stolt, S. (2021). Early receptive and expressive lexicons and language and pre-literacy skills at 5; 0 years–A longitudinal study. *Early Human Development*, *156*, Article 105345. https://doi.org/10.1016/j.earlhumdev.2021.105345
Vermillet, A. Q., Tølbøll, K., Litsis Mizan, S., C Skewes, J., & Parsons, C. E. (2022). Crying in the first 12 months of life: A systematic review and meta-analysis of cross-country parent–reported data and modeling of the "cry curve". *Child Development*, *93*(4), 1201–1222. https://doi.org/10.1111/cdev.13760
Werker, J. F., & Tees, R. C. (1984). Cross-language speech perception: Evidence for perceptual reorganization during the first year of life. *Infant Behavior and Development*, *7*(1), 49–63. https://doi.org/10.1016/S0163-6383(84)80022-3
Werker, J. F., Pegg, J. E., & McLeod, P. J. (1994). A cross-language investigation of infant preference for infant–directed communication. *Infant Behavior and Development*, *17*(3), 323–333. https://doi.org/10.1016/0163-6383(94)90012-4
Werwach, A., Mürbe, D., Schaadt, G., & Männel, C. (2021). Infants' vocalizations at 6 months predict their productive vocabulary at one year. *Infant Behavior and Development*, *64*, 101588. https://doi.org/10.1016/j.infbeh.2021.101588
Windsor, J., Glaze, L. E., & Koga, S. F. (2007). Language acquisition with limited input: Romanian institution and foster care. *Journal of Speech, Language, and Hearing Research, 50*, 1365–1381. https://doi.org/10.1044/1092-4388(2007/095)
Yee, S. (2020). *Is noun bias universal? Evidence from Chinese and Korean compared with French and English*. Studies in the Linguistic Sciences: Illinois Working Papers. http://hdl.handle.net/2142/109008

Key Terms

A not B error error in which an infant searches for an object in the original rather than the new hiding place
accommodation process by which we alter an existing schema to fit new information
assimilation process by which we incorporate new information into an existing schema
babbling repeated sequence of consonant-vowel sounds
biopsychosocial change influenced by biological, psychological, and social factors
child-directed speech speech with a sing-song intonation, simple words, and exaggerated pronunciation
circular reaction repeated movement observed during the sensorimotor stage
co-sleeping practice in which caregivers share a bed or a room with the infant or toddler
cooing deliberate generation of vowel sounds
deferred imitation repetition of a behavior after some time has passed
dynamic systems theory theory that developmental behaviors and milestones are the result of interactions between systems, including those within the individual
electroencephalogram (EEG) test that measures electrical activity in the brain
explicit memory type of memory that we consciously try to remember and recall
expressive style use of language for social reasons, to express feelings and needs
fast mapping process by which children quickly connect words and their meanings
fine motor skills coordinated movements performed by small muscles to manipulate and control objects or perform precise tasks like reaching for and grasping an object
frontal lobe portion of the brain that controls thinking, planning, memory, and judgment
gray matter outer layer of the brain
gross motor skills voluntary movements that rely on large muscle groups and typically activate the arms, legs, head, and torso
growth chart chart used to identify typical weight, height, and head circumference for boys and girls
habituation decreased interest in and response to repeatedly presented stimuli
holophrase speech that uses a single word to express an idea
implicit memory type of memory that is not part of our consciousness
infant mortality death before the age of one year
infinite generativity capacity to create an unlimited number of meaningful messages
interactionist approach approach to language development highlighting the complex interactions between the biological readiness of children and the environment in which they are raised
intermodal perception awareness of the world gained through multiple senses at the same time
kwashiorkor severe malnutrition, with a loss of appetite and swelling of the abdomen as the body breaks down organs as a source of protein
language communication system that uses words and rules to allow the transmission of information between individuals
lateralization process in which different functions become localized to one side of the brain
learning approach approach to language development that highlights the contribution of caregivers
long-term memory relatively permanent storage of information
marasmus starvation due to lack of calories and protein
morpheme smallest meaningful unit of language
myelination process by which the axon develops the myelin sheath
nativist approach approach to language development asserting that humans are born with the innate ability to learn language and that experience plays a very limited role
neurogenesis development of new neurons
neuron cell in the brain that sends messages
NREM non–rapid eye movement sleep, characterized by slowed heart rate and respiration
object permanence ability to recognize that an object exists even when we cannot observe it
occipital lobe portion of the brain that processes visual information

overextension tendency of young children to use words to inappropriately name something else
parietal lobe portion of the brain that processes sensory information such as touch and spatial awareness
perception interpretation of sensory information
phoneme smallest unit of sound
plasticity brain's ability to change, physically and chemically, in response to environmental input and to compensate for injury
prefrontal cortex front of the frontal lobe that regulates emotions and is involved in planning and judgment
referential style use of language to talk about objects and things
reflex involuntary movement in response to a stimulation
REM rapid eye movement sleep, sometimes called active sleep
schema a mental framework used to organize and interpret information
sensation detection of sensory stimuli
sensorimotor development first stage of Piaget's theory of cognitive development theory, focused on children's early experiences of the world
smell perception of odors via the nose and part of olfactory system
social referencing process in which children use information from another to determine their own response
sudden infant death syndrome (SIDS) death of a healthy infant that is sudden and unexpected and cannot be explained
sudden unexpected infant death (SUID) death from sudden infant death syndrome (SIDS), accidental suffocation or strangulation, or an unknown cause
sustained attention extended focus on an activity or stimulus
symbolic thought ability to mentally represent objects, people, or events that are not present
synapse gap between neurons where neurotransmitters are released from the axon to the dendrite of the next neuron
synaptic pruning process by which unused connections of neurons die off
synaptogenesis process in which neurons connect with other, nearby neurons
taste perception of flavor from receptors in mouth and tongue
telegraphic speech speech that uses few words and does not rely on grammar rules
temporal lobe portion of the brain associated with hearing and language
underextension tendency of young children to inappropriately restrict the use of a word
undernutrition intake of inadequate calories and/or nutrition
universal listener infant who can distinguish the sounds of both native and non-native languages
visual cliff test of depth perception that uses a table with the appearance of a drop-off from a shallow to deep surface
white matter brain matter composed of many bundles of axons that connect neurons to different regions with functional circuits/pathways

Summary

3.1 Physical Development in Infants and Toddlers

- Significant physical developmental changes occur during the first two years of life. Growth charts help document developmental patterns and identify signs of abnormal growth.
- Sleep is an essential biopsychosocial process, meaning it is influenced by biological, psychological, and social factors.
- Infant sleeping arrangements and bedtime activities are deeply influenced by family and cultural factors. Some sleep methods are known to prevent sleep-related deaths.
- Nutrition is an important component for the health and development of young children. With advances in physical development, the infant's diet can begin to include solid food.
- As the brain develops, once-automatic reflexes become controlled movements. The brain continues to specialize based on experiences and biological predispositions.

- Malnutrition can both lead to significant health problems and limit growth and development.

3.2 Motor Development in Infants and Toddlers

- Motor development progresses rapidly from infancy, starting with the ability to lift the head and advancing to jumping and climbing by two years of age.
- Motor development milestones in the first year include rolling over, sitting up, crawling, standing, and eventually walking. Infants and toddlers also develop increasingly refined motor skills, such as grasping and manipulating objects.
- Both gross and fine motor development are important for a child's overall physical and cognitive development, and parents and caregivers can support the development of both types of skills through play and other activities.
- Influences on motor development can include genetic predisposition, culture, and environmental factors such as opportunities for physical activity and play.

3.3 Sensory Development in Infants and Toddlers

- In the first two years of life, sensory abilities improve significantly.
- During the first six months, the eye matures, and visual acuity and contrast sensitivity improve.
- Psychologists have developed different methods for studying infant hearing, which show that infants have preferences for familiar sounds and can distinguish between familiar and unfamiliar voices.
- Touch makes a critical contribution to our physical, cognitive, and social development.
- Newborns can distinguish different tastes and odors, which can later influence children's acceptance of new foods.
- Intermodal perception is the perception of the world through multiple senses at the same time.

3.4 Cognition and Memory in Infants and Toddlers

- Piaget's theory explains cognitive development in terms of stages, with changes happening through schema development. During the sensorimotor stage, infants go through six substages as senses, motor skills, and coordination develop.
- Information processing theories examine infant attention, encoding, and memory, explaining development as a series of gradual changes in cognitive structures and processes.
- Vygotsky describes cognitive development as occurring through social interactions and culture.
- Multiple factors contribute to individual differences in cognitive development, including culture, social environment, socioeconomic status, and home environment.

3.5 Language in Infants and Toddlers

- Language and communication development follow a rapid progression in the first years of life.
- Language development includes understanding the key features of language: phonemes, morphemes, semantics, syntax, and pragmatics.
- Language milestones in the first two years include crying, cooing, babbling, gestures, holophrases, and telegraphic speech.
- Three main types of theories explain the development of language: nativist, learning, and interaction theories.
- Variations in language development occur through differences in exposure, quality of the environment and family interactions, and language exposure.

Review Questions

1. The practice of safely wrapping an infant in a blanket to help calm the infant during sleep time is called_____.
   a. swaddling
   b. the Ferber method

c. A-B-C method
d. papoosing

2. Organizations such as the World Health Organization, the American Academy of Pediatrics, and UNICEF all recommend exclusively breastfeeding for the first _____ months of life.
a. 3
b. 6
c. 9
d. 12

3. The left hemisphere is typically specialized for language production and perception. This is an example of _____.
a. synaptogenesis
b. lateralization
c. neurogenesis
d. plasticity

4. Sudden Unexpected Infant Death (SUID) includes which of these events?
a. strangulation in bed
b. accidental suffocation
c. sudden infant death syndrome (SIDS) where cause of death was conclusively determined
d. death because of undernutrition

5. What newborn reflex can facilitate breast (or chest) feeding?
a. rooting
b. palmar grasp
c. Moro
d. Babinski

6. What predictable pattern of motor development can we observe during infancy?
a. dynamic
b. proximodistal
c. normative
d. dystonic

7. Teagan is eleven months old and just starting to walk and feed herself. Walking is an example of a _____ motor skill, and self-feeding is an example of a _____ motor skill.
a. fine; gross
b. gross; fine
c. proximodistal; cephalocaudal
d. cephalocaudal; proximodistal

8. A baby born in which country is typically going to sit up on their own the earliest?
a. the United States
b. Italy
c. Kenya
d. Argentina

9. What is typically the least fully developed sensory system in newborns and infants?
a. taste

b. smell
c. touch
d. vision

10. At birth, what is typically the most highly developed sensory system?
a. vision
b. hearing
c. smell
d. touch

11. Which is an example of intermodal perception?
a. An infant touches a block and feels its sharp edges.
b. A toddler hears a shaking rattle.
c. A toddler smells cinnamon apples and smiles.
d. A baby sees and hears a parent play peek-a-boo.

12. Elina is playing with her mom and sees a caterpillar. Her mom says, "That is a caterpillar. We know it is alive because it moves." A little later, Elina sees clouds moving in the sky. What response would show Elina has engaged in what Piaget called assimilation?
a. Elina says the cloud is alive because it is moving.
b. Elina says the cloud is not alive because it is moving.
c. Elina says living things breathe.
d. Elina says living things die.

13. Kyleen is playing with her toys and makes the *vroom, vroom* sound she heard her sister make yesterday. This response is an example of _____.
a. scaffolding
b. object permanence
c. deferred imitation
d. working memory

14. Vygotsky's theory promotes which explanation for cognitive development?
a. We learn through social interaction.
b. We learn through guided participation in a social and cultural context.
c. We learn through play and exploration.
d. We go through stages of change for cognitive development.

15. Anna is playing a game with one of her parents. They have just hidden her favorite toy behind the toy box twice but now they decide to hide it behind another toy. Although Anna was watching her parent hide the toy, she still looks behind the toy box. Anna is demonstrating _____.
a. deferred imitation
b. violation of expectations
c. object permanence
d. the A not B error

16. If a toddler says "mama ball," what type of speech is this?
a. expressive
b. receptive
c. holographic
d. telegraphic

17. If I were studying speech and interested in the meaning of words, on what would I focus most?
   a. phonemes
   b. morphemes
   c. syntax
   d. pragmatics

18. What are the typical stages in language development?
   a. babble, coo, cry, holophrastic, telegraphic
   b. cry, coo, babble, telegraphic, holophrastic
   c. coo, cry, pragmatic, babble, telegraphic
   d. cry, coo, babble, holophrastic, telegraphic

19. Which statement supports a nativist approach to language development?
   a. Parents should praise children when they make sounds to encourage talking.
   b. Humans are born with the ability to learn any language.
   c. Language is the only form of communication.
   d. Children learn language by observing others using it.

20. A father is watching his son try to feed himself a piece of apple. They are both looking at the small apple pieces on the plate. What type of attention is this?
   a. direct attention
   b. joint attention
   c. inhibition
   d. sustained attention

Check Your Understanding Questions

21. Describe a health risk associated with sleeping practices and one way to prevent it.

22. Describe three patterns of growth seen during infancy and toddlerhood.

23. Explain the process by which a child learns to walk. What existing gross motor skills are needed?

24. Explain the process by which a child learns to self-feed. What existing fine motor skills are needed?

25. What is intermodal perception? Explain your answer using at least one example.

26. What major changes occur in color vision during the first year of life?

27. Describe Piaget's circular reactions (primary, secondary, tertiary).

28. Describe two ways in which we study infant attention and memory. How can we tell what infants are paying attention to?

29. Describe the major milestones in language development that occur during the first two years of life.

30. How does the nativist approach to language development differ from the learning approach?

31. Describe the developmental progression of language development in the earliest years of life.

Personal Application Questions

32. Reflect on your own physical development or that of someone you know as a young child. How might the cephalocaudal and proximodistal patterns of growth have influenced early milestones, such as sitting up, crawling, or reaching for objects? Consider how these developmental patterns are evident in real-life examples.

33. Think about the sleep patterns you had as an infant or toddler, or those of a child you know. Were these patterns in line with the typical sleep recommendations discussed in this section? Reflect on how cultural or family practices might have influenced these sleep habits and what impact they might have had on overall development.

34. Consider the feeding practices you experienced in early childhood or those you've observed in others. Reflect on how these practices compare to the feeding recommendations for infants and toddlers discussed in this section. How might these early experiences have influenced later eating habits or preferences?

35. Reflect on any memories or observations you have of a newborn baby, either in your own life or within your family or friends. What reflexes did you notice in the newborn? Did they surprise you? Did these reflexes change over time? How do you think these reflexes might serve as indicators of healthy development?

36. Think back to when you or someone you know learned to walk or achieve other motor milestones. How did the environment—such as the presence of siblings, access to safe play areas, or parental encouragement—affect the speed or manner in which these milestones were reached? Reflect on how this environment might shape other aspects of development.

37. Consider a time when you, as a child or an adult, developed a fine motor skill, such as learning to write, play an instrument, or tie your shoes. How did practice, repetition, and environmental factors like the availability of tools or guidance impact your ability to master this skill? Reflect on how this experience might relate to how infants and toddlers develop fine motor skills.

38. Reflect on the various influences that shaped your early motor development. For example, were there specific toys, activities, or cultural practices that encouraged or delayed your motor milestones? How do you think these influences impacted your later physical abilities and interests? How might this reflection influence how you approach motor development in children today?

39. Think about a time when you or someone you know interacted with a young child who was just beginning to explore their environment. How did their sensory development (e.g., visual or auditory perception) shape their ability to navigate and learn from their surroundings? Reflect on the importance of this sensory exploration in cognitive development.

40. Consider the influence of environmental factors on sensory development in infants and toddlers. How might different environments (e.g., a noisy city versus a quiet rural area) affect an infant's sensory experiences and development? Reflect on how parents and caregivers can optimize these environments to support healthy sensory development.

41. Reflect on a time when you observed an infant or toddler engaging with their environment, similar to how Dante interacted with the pots and pans in the section introduction. How did the child's actions demonstrate key milestones in cognitive development, such as exploring cause and effect or using objects in new ways? How might these observations relate to Piaget's sensorimotor stages?

42. Think about your earliest memory. How old were you, and what do you remember? How might your memory development have been influenced by the environment, including interactions with caregivers, sensory experiences, or language exposure? Reflect on how infantile amnesia might explain the gaps in your early memories.

43. Reflect on a time when you observed a young child or when you yourself learned something new with the help of a more knowledgeable person, like a parent, teacher, or older sibling. How did this guidance help in constructing your knowledge or completing a task? How does this experience relate to Vygotsky's concept of the zone of proximal development and scaffolding?

44. Think about your own cultural or linguistic background. How did your early environment, including the

language or languages spoken around you, influence your language development? Reflect on any challenges or advantages you experienced because of your linguistic environment and how these experiences might have shaped your language skills.

45. Reflect on a time when you observed a child using gestures, like pointing or waving, to communicate before they developed verbal skills. How did these nonverbal cues enhance their ability to interact with others? What does this suggest about the importance of nonverbal communication in early language development?

46. Consider the different theories of language development, such as the nativist, learning, and interactionist approaches. How might each of these theories apply to your own experience with language learning, either as a child or in learning a second language later in life?

Essay Questions

47. Discuss the key processes involved in brain growth and development during the first two years of life, including neurogenesis, synaptogenesis, and myelination. How do these processes influence a child's cognitive and motor abilities? Provide examples of how early experiences can shape brain development and contribute to long-term outcomes in learning and behavior. Additionally, explore the benefits of early childhood enrichment programs in supporting optimal brain development and improving long-term educational outcomes.

48. Imagine you are a pediatrician tasked with creating a primer for new parents about the greatest health risks to toddlers and how to minimize them. Identify and discuss at least three significant threats to toddlers' health, including both physical and environmental factors. Explain the steps that can be taken to reduce or prevent these risks, and emphasize the importance of early intervention and monitoring in maintaining a toddler's overall well-being.

49. Analyze the role of play in the development of gross and fine motor skills in infants and toddlers. How does play contribute to the refinement of motor skills? Provide examples of specific play activities that support both gross and fine motor development. Discuss how caregivers can facilitate motor skill development through intentional play.

50. Discuss how cultural practices and environmental factors influence motor development in infants and toddlers. Provide examples of how different cultural practices can either accelerate or delay motor milestones. How can understanding these influences help health-care providers and educators better support the motor development of children from diverse backgrounds?

51. Discuss how different environmental factors influence the sensory development of infants and toddlers. Consider how variations in living conditions, such as urban versus rural settings, might impact the development of sensory abilities like hearing, vision, and touch. Provide suggestions for how caregivers can optimize the environment to support healthy sensory development.

52. Write an essay that explores the concept of intermodal perception and its role in the cognitive and sensory development of infants. Discuss how infants learn to integrate information from multiple senses simultaneously and provide examples of how this ability affects their interaction with the world.

53. Using Piaget's theory of cognitive development, write an essay analyzing the different sensorimotor substages a child might go through in their first two years of life. Provide examples of behaviors that could be observed during each substage. How do these stages build upon each other to advance a child's cognitive abilities?

54. Discuss the role of caregivers in the early language development of infants and toddlers. How do interactions between caregivers and children, such as through child-directed speech and responsive communication, influence the development of language skills? Provide examples of effective strategies that caregivers can use to promote language development and explain why these strategies are beneficial.

55. Analyze the impact of socioeconomic status (SES) on the language development of infants and toddlers. How does SES influence access to resources, caregiver interactions, and exposure to language-rich environments? Discuss potential interventions that could mitigate the negative effects of low SES on language development and propose strategies that could be implemented at the community or policy level.

Social and Emotional Development in Infants and Toddlers (Birth to Age 3)

4

FIGURE 4.1 Infants show the beginnings of their individuality and personality through emotional and social behaviors, such as bonding activities like making eye contact during nursing and smiling while interacting with a parent. (credit left: modification of work "Young baby in a cradle hold" by Mothering Touch/Flickr, CC BY 2.0; credit right: modification of work "Wrapsody Artisan Ring Sling: Ceylon" by Kristi Hayes-Devlin/Flickr, CC BY 2.0)

CHAPTER OUTLINE

4.1 Autonomy and Sense of Self in Infants and Toddlers
4.2 Temperament and Personality in Infants and Toddlers
4.3 Emotional Development in Infants and Toddlers
4.4 Social Development in Infants and Toddlers
4.5 Social Contexts and Influences in Infants and Toddlers

WHAT DOES PSYCHOLOGY SAY? Sarah and Amelia love their baby Asher, but they find the transition to life with a newborn challenging. Both mothers are sleep deprived and anxious. Like most new parents, they're also worried about making mistakes.

Asher is now eight weeks old and quite fussy. He cries until his face turns red but seems satisfied after Sarah nurses him. Amelia often places Asher in a sling and takes him for a walk. It works every time, but only briefly.

Family and friends have been offering their advice. Amelia's father says, "You're going to spoil that baby if you keep picking him up," while Amelia's mother interjects: "Turn on that cartoon with the monster trucks! He'll like that!" Meanwhile, the mommy blogs keep saying screentime is bad for babies. Amelia looks at her son's face as he naps in her arms. Like many caregivers, she feels overwhelmed by conflicting advice and wonders:

- Will picking up a crying baby spoil them?

- Are baby boys born with a preference for toy trucks and the color blue?
- Is screen time bad for infants?
- Is day care or family home care better for infant development?

In this chapter, you'll learn what current research says about questions like these.

4.1 Autonomy and Sense of Self in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the concepts of autonomy and sense of self
- Identify the early milestones of self-awareness and development of self
- Describe the beginnings of gender identity and the role of gender socialization in development

Elyse is sixteen months old and starting to show a fair amount of independence. She toddles around the house with curiosity, exploring the objects, pets, and people around her. Her parents are thrilled to start engaging in play with her that shows her silly personality emerging. She likes to put a little toy car on her head and then let it roll off before giggling with delight at her own joke. Elyse looks at her parents and giggles even more when she sees their reaction.

Elyse recently learned the word "no" and loves to scrunch her face when she says it to turn down certain foods or clothes. Her mother Diana has heard other parents say, "Uh oh, that's the first sign of the *terrible twos*!" but she cannot help but smile when Elyse says "no." She feels proud of her daughter for learning to use a word to assert some independence, and she wonders how much her daughter understands about her individual self and the world around her.

Infants and toddlers begin to develop an awareness of their individuality, including their sense of self, independence, self-awareness, and the beginnings of gender identity. An early step in developing a sense of self is beginning to understand that we are different from others and learning how our body interacts in the world.

The Self and Others

When infants are born, they have no concept of self; they are unable to distinguish between who is "me" and who is *not* "me." Their entire world is interconnected, and they are still discovering where they end and their caregiver or their surrounding environment begins (Fini et al., 2023).

One important step in discovering who they are is discovering what they have control over (Rosen, 2016). The sense of independence or freedom to control yourself and your actions is called **autonomy**. In the first few weeks of life, an infant may discover that they have complete autonomy over their ability to wiggle their arms and legs, but they don't have control over whether their caregiver picks them up or feeds them. This awareness of the difference is the beginning of developing a sense of self (Guenther, 2022).

Infants also develop their awareness of the self versus others within their social experiences, beginning with interactions with their primary caregiver(s) (Erikson, 1968). Just as infants learn autonomy by discovering what they have control over, they are also discovering relatedness through their connections with others (Tamis-LeMonda et al., 2008). Caregiver interactions such as smiling, saying an infant's name, and providing comfort and physical contact all help infants learn about their sense of self (Ross et al., 2017).

Cultural experiences with caregivers and others also play a role in shaping early autonomy and relatedness. For example, in many Western cultures, middle-class parents are more likely to encourage autonomy and a separate self, whereas non-Western middle-class parents are likely to focus more on social responsibility and the new family member's role in the family (Keller, 2011, 2018).[1] One study showed that Japanese mothers temporarily living in the United States encouraged relatedness and shared experiences during play with their toddlers, while U.S. mothers emphasized autonomy (Dennis et al., 2002). Despite different styles of cultural and familial interactions, our sense of self and autonomy shows many similarities across cultures (Helwig, 2006).

As infants reach physical milestones such as being able to touch their feet, sit up, and crawl, they gain insight into themselves as someone distinct from others. As you learned in 3.4 Cognition and Memory in Infants and Toddlers, infants are also growing in their cognitive skills through circular reactions that allow them to better understand how they can influence their environment—from moving their body to manipulating objects (Piaget, 1954). These physical, social, and cognitive milestones all work collectively to give infants a sense of self, an awareness of self as different from others. Later in early childhood and beyond, this sense of self will grow into a self-concept as children's cognitive development and self-awareness improve. At first, however, the self-concept is basic, containing very little information other than bodily control (Guenther, 2022).

Self-Recognition

Determining exactly when an infant has a sense of self, or self-awareness, is no easy task. After all, the sense of self is slowly developing alongside the infant's cognitive and physical development and interactions with their caregivers. At the age of twelve months, the infant may know how to interact with a caregiver or manipulate a toy for entertainment, but the infant's sense of self typically does not include their appearance. The reason is that infants lack **self-recognition**, the ability to recognize and be aware of themselves in reflective surfaces or photos (Figure 4.2) (Anderson, 1984). Researchers use a task involving a mirror to assess when infants acquire visual self-recognition, known as the **mirror test** (also, **rouge test**) (Lewis & Brooks-Gunn, 1979). In this test, a red mark is made on the infants' nose without their being aware, and then they are placed in front of a mirror. Researchers then simply observe how the infant reacts, or does not react, to the red mark.

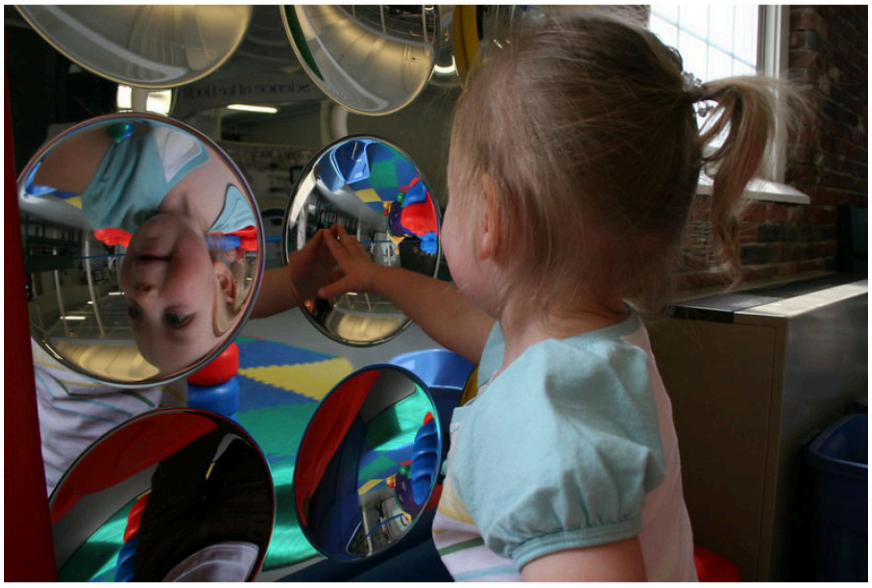


FIGURE 4.2 Toddlers are just learning visual self-recognition when they see themselves in the mirror. (credit: "IMG_0562" by Abigail Batchelder/Flickr, CC BY 2.0)

Before the age of eighteen months, most infants regard their reflection with either wariness or openness; the face is perceived as that of a stranger or potential playmate. In other words, they do not seem to notice the red

1 This research (Keller, 2011, 2018) uses the terms "Western" and "non-Western."

mark. This indicates to researchers that their self-recognition is incomplete; they do not recognize their face. After eighteen months, most touch their nose, indicating a sense of self-awareness and self-recognition. These infants are indicating that they know their face and recognize it, and that red mark is not part of their self-awareness. Infants may meet these milestones, like many others, at various ages based on their experiences including environmental and social influences. For example, some research indicates that when mothers scaffold learning (such as by asking who is in the mirror), infants learn to recognize themselves earlier (Bard et al., 2006). Other research indicates that when parents engage in imitation (such as a parent imitating their toddler's play behavior), infants also may learn self-recognition earlier (Cebioğlu & Broesch, 2021).

The mirror self-recognition test is a useful indication of emerging self-awareness in toddlers and fairly easy to try at home to learn more about a toddler's experience of the world (Brandl, 2018; Suddendorf & Butler, 2013). Table 4.1 provides a detailed breakdown of the age-related changes assessed in this test. Even after recognizing themselves in a mirror, infants may not pick themselves out in group photos until they are about twenty-four months of age, indicating that self-awareness is still developing (Courage et al., 2004).

Age (Months)	Typical Reaction to the Mirror Test
6–12	Shows social interest in a potential playmate
12–18	Expresses wariness, avoidance, and confusion
18–24	Reveals self-recognition by touching their own nose

TABLE 4.1 Results of the Mirror Test of Infant Self-Recognition (source: Anderson, 1984)

LINK TO LEARNING

The mirror test is a simple test used to identify the beginnings of self-recognition in infants and toddlers. Watch this video demonstrating the mirror test (https://openstax.org/r/104MirrorTest) to learn more.

How does self-awareness develop if there are no mirrors? Ross and colleagues (2017) examined a group of eighteen-month-old infants in Scotland and Zambia, of whom 90 percent of Scottish but only 15 percent of Zambian infants had regular access to mirrors. Although the Scottish infants performed better on the mirror test, the Zambian infants performed significantly better on a **body-as-obstacle test**. Body-as-obstacle is the situation that occurs when our body position or placement interferes with our goals. In this test of self-awareness, infants were placed on a mat that needed to be moved; they needed to recognize that they must step off the mat before attempting to pull it. Acquiring self-recognition and self-awareness allows infants to explore and interact in their world much more fully, including being able to engage in pretend play and better communicate with others about their experiences (Lewis & Ramsay, 2004). Children likely show differences in the aspects of self-recognition they demonstrate based on their cultural and familial experiences. For example, some may acquire body awareness first, whereas others may acquire visual awareness first. Infants and toddlers also show self-awareness in other ways, such as by using personal pronouns (Courage et al., 2004). Each of these aspects of self-awareness develops in the first few years of life.

LINK TO LEARNING

Like the mirror test, the body-as-obstacle test can teach us more about infants' and toddlers' self-awareness. Watch this video demonstrating the body-as-obstacle test (https://openstax.org/r/104BodyObstacle) to learn more.

Gender Identity and Socialization

Understanding who we are requires knowing many facets of ourselves, our culture, and our abilities. One area of identity that begins to develop especially early in life is our gender identity. People commonly ask whether a new baby is a boy or a girl. Sometimes parents-to-be even "reveal" this and other details about their infant before birth, at gender-reveal parties. Actually, "gender reveal" is a misnomer, because what is being revealed is the baby's biological sex, not their psychological gender identity.

An individual's sex is often assigned at birth (or before) based on the presence of external genitalia or genetic testing (assigned female at birth, or assigned male at birth, AFAB and AMAB, respectively). Infants are typically classified as either male or female, but some are identified as having differences of sex development (DSD), which indicates their physical or biological characteristics are neither exclusively female nor exclusively male (Media et al., 2022; Sax, 2002). Although most females have two X chromosomes (XX) and most males have one X and one Y chromosome (XY), DSD individuals may have many other genetic combinations, prenatal hormonal expressions, and/or physical characteristics. (Refer to 2.1 Genetics and Environment for more information.)

As discussed in 1.4 Contexts and Settings of Development, gender identity is an individual's psychological sense of their gender. Often, our gender identity is associated with our biological sex; many males identify as boys and men, and many females identify as girls and women. But that is not always the case. Understanding, recognizing, and identifying our own gender is a complex process that takes years to accomplish and often begins with gender socialization.

The process by which we are exposed to and learn gender roles and expectations in our culture is **gender socialization**. As soon as families know an infant's biological sex, they often start to enforce **gender stereotypes**—societal expectations and assumptions based on an individual's sex or gender identity. For example, infants' clothes, toys, and blankets may be selected so that they reinforce gender stereotypes: pink ballerinas for girls and blue trucks for boys. Infants quickly learn these stereotypes; at twelve, eighteen, and twenty-four months of age, girls tend to look longer at photos of dolls than boys do, and boys tend to look longer at photos of trucks than girls do (Jadva et al., 2010; Serbin et al., 2001). A recent meta-analysis showed that boys preferred certain toys and girls preferred others, suggesting that girls and boys show similar levels of gender-related differences in toy preference, both for broad groups of toys and for dolls and vehicles specifically (Davis & Hines, 2020). The tendency to prefer gender-stereotyped toys also increased with the child's age, indicating that gender socialization may increase gender-stereotyped play over time. Gender socialization comes from caregivers, peers, and media and often begins before an infant is even born, sometimes without awareness or intent (Figure 4.3).

(a) (b)

FIGURE 4.3 Gender socialization begins shortly after birth and includes the way caregivers select clothing and accessories for young infants. (credit a: "Tutu" by Corinna Dibble/Flickr, CC BY 4.0; credit b: "Baby Boy" by Sarah Evans/Flickr, CC BY 4.0)

LINK TO LEARNING

Even people who believe they would treat boys and girls the same way can easily end up using gender stereotypes in interacting with babies. Check out this video that demonstrates how children's clothing and surrounding toys can influence their interactions with adults (https://openstax.org/r/104GenStereotyp) to learn more.

But gender stereotypes go beyond toy selection. Parents of girls tend to perceive them as more delicate and handle them with a soft touch, whereas parents of boys tend to perceive them as strong and use a firmer and more energetic touch (Stepakoff & Beebe, 2023; Stern & Hildebrant-Karraker, 1989). Parents also differ in the types of vocalizations, conversation style, eye contact, and play behavior they initiate with infant girls and boys (Morawska, 2020). Finally, parents may enforce gender stereotypes by rewarding infants when they conform to gendered expectations (Caldera et al. 1989; Stacey, 2021). However, other studies have shown that these gender differences in toy preferences are not always present. In a study of six- to twenty-month-old infants in Australia, infant toy preferences were based on a range of factors beyond gender, including parental attitudes, past toy exposure, and whether the toy was moved or was stationary (Liu et al., 2020). Parents who show gendered preferences in the toys they expose children to likely increase gender-stereotyped play, whereas parents who encourage a wider range of toy types may have infants who do not show gender-stereotyped toy preferences.

Parents may also begin to encourage different learning skills, such as by engaging in more scientific conversations with boy children (Crowley et al., 2001). Strangers, teachers, and others also reinforce these stereotypes. Multiple studies have found that the simple act of changing infants' gender-stereotyped clothing can alter the way adults play and talk with them (Frisch, 1977; Shakin et al., 1985). In conclusion, children learn gender roles and stereotypes in society through socialization (Leaper & Friedman, 2007). However, parents show great variability in their own gendered expectations. For example, a study of expectant parents in Germany found that fathers were more likely than mothers to have gendered beliefs about their future baby, such as believing their female baby would be soft spoken, whereas a male baby would be assertive (Imhoff & Hoffman, 2023).

INTERSECTIONS AND CONTEXTS

Gender, Culture, and Media

Gender socialization and stereotypes vary around the world. Although boys and masculinity have classically been associated with power and dominance and girls and femininity with cooperation and submissiveness, the extent to which people believe in these stereotypes varies by culture (Foels & Pappas, 2004). For instance, preschoolers in France and Lebanon are more likely to believe there is a gendered difference in capacity for leadership and power than are preschoolers in Norway (Charafeddine et al., 2020). One reason might be Norway's strong policies to promote gender equality across a range of occupations and in educational programs in classrooms.

How do we transmit these beliefs about gender in our culture? Often, we do it through the behaviors and expectations of family members. But a second powerful source is the media and literature. For instance, toy commercials directed at young children differed in their endorsement of gender stereotypes, with Australian commercials showing more similarity between boys and girls and commercials in the United States showing more exaggerated differences (Browne, 1998). In the latter commercials, boys were more likely to display aggression, dominance, and leadership than girls were. Girls were more likely to be portrayed as cooperative and submissive. More recently, research has shown that picture books in early childhood education centers in both the United States and Australia tended to depict stereotyped and binary gender roles (Adam & Harper, 2021). Children's books also show these gender stereotypes in the words chosen for describing characters (Lewis et al., 2022). This indicates that these gendered trends are pervasive across many cultures and children's early

experiences.

Infants and toddlers learn about their world by watching others and through exposure to the media. The way boys and girls are depicted in children's media may inform toddlers about the gender expectations in their culture (Figure 4.4). Encouraging children from infancy onward to play with a wide range of toys and be more aware of the gender roles portrayed in their media and literature can be highly beneficial to their growing sense of identity and gender. It can also offer them a wider variety of choices for discovering themselves and the world around them.

FIGURE 4.4 Media exposure often presents toddlers with exaggerated gender stereotypes, such as the stereotype of (a) a girl as a beautiful princess and (b) a boy as a strong hero. (credit a: modification of work "The Forlorn Fairy" by Vanessa Kay/Wikimedia Commons, CC BY 3.0; credit b: modification of work "Lil Wolverine" by Eden, Janine and Jim/Flickr, CC BY 2.0)

Gender stereotypes and socialization provide infants with feedback and insight into their own gender identity (Fausto-Sterling, 2021). On average, by age two years, toddlers can identify the gender of their family members, and by age three years, they can label their own gender (Poulin-Dubois et al., 1998). Signs that a child may be gender diverse or gender nonconforming can appear in these early years if their biological sex and gender identity don't match society's expectations. One sign is infants responding negatively to their assigned gender's toys, terms, and clothes and preferring to respond and conform to another gender (deMayo et al., 2022). However, some gender role experimentation is typical in young children whether they are gender conforming or gender diverse. Finally, because gender behaviors exist on a spectrum and genders have far more commonalities than differences, it's generally recommended that adults let infants and toddlers explore a range of behaviors and toys (Halpern & Perry-Jenkins, 2016).

References

Adam, H., & Harper, L. J. (2021). Gender equity in early childhood picture books: A cross-cultural study of frequently read picture books in early childhood classrooms in Australia and the United States. *Australian Education Research, 50,* 453–479. https://doi.org/10.1007/s13384-021-00494-0

Anderson, J. R. (1984). The development of self-recognition: A review. *Developmental Psychobiology, 17*(1), 35–49. https://doi.org/10.1002/dev.420170104

Bard, K. A., Todd, B. K., Bernier, C., Love, J., & Leavens, D. A. (2006). Self-awareness in human and chimpanzee infants: What is measured and what is meant by the mark and mirror test? *Infancy, 9*(2), 191–219. https://doi.org/10.1207/s15327078in0902_6

Brandl, J. L. (2018). The puzzle of mirror self-recognition. *Phenomenology and the Cognitive Sciences, 17*, 279–304. https://doi.org/10.1007/s11097-016-9486-7

Browne, B. A. (1998). Gender stereotypes in advertising on children's television in the 1990s: A cross-national analysis. *Journal of Advertising, 27*(1), 83–96. https://www.jstor.org/stable/4189061

Caldera, Y. M., Huston, A. C., & O'Brien, M. (1989). Social interactions and play patterns of parents and toddlers with feminine, masculine, and neutral toys. *Child development, 60*(1), 7076. https://doi.org/10.1111/j.1467-8624.1989.tb02696.x

Cebioğlu, S., & Broesch, T. (2021). Explaining cross-cultural variation in mirror self-recognition: New insights into the ontogeny of objective self-awareness. *Developmental Psychology, 57*(5), 625–638. https://psycnet.apa.org/record/2021-58449-002

Charafeddine, R., Zambrana, I. M., Triniol, B., Mercier, H., Clement, F., Kaufmann, L., Reboul, A., Pons, F., & van der Henst, J.-B. (2020). How preschoolers associate

power with gender in male-female interactions: A cross-cultural investigation. *Sex Roles: A Journal of Research, 83*(7–8), 453–473. https://doi.org/10.1007/s11199-019-01116-x
Courage, M. L., Edison, S. C., & Howe, M. L. (2004). Variability in the early development of visual self-recognition. *Infant Behavior & Development, 27*(4), 509–532. https://doi.org/10.1016/j.infbeh.2004.06.001
Crowley, K., Callanan, M. A., Tenenbaum, H. R., & Allen, E. (2001). Parents explain more often to boys than to girls during shared scientific thinking. *Association for Psychological Science, 12*(3), 258–261. https://doi.org/10.1111/1467-9280.00347
Davis, J. T. M., & Hines, M. (2020). How large are gender differences in toy preferences? A systematic review and meta-analysis of toy preference research. *Archives of Sexual Behavior, 49*(2), 373–394. https://doi.org/10.1007/s10508-019-01624-7
deMayo, B. E., Jordan, A. E., & Olson, K. R. (2022). Gender development in gender diverse children. *Annual Review of Developmental Psychology, 4,* 207–229. https://doi.org/10.1146/annurev-devpsych-121020-034014
Dennis, T. A., Cole, P. M., Zahn-Waxler, C., & Mizuta, I. (2002). Self in context: Autonomy and relatedness in Japanese and U.S. mother-preschooler dyads. *Child Development, 73*(6), 1803–1817. https://doi.org/10.1111/1467-8624.00507
Erikson, E. H. (1968). *Identity: Youth and crisis.* Norton & Co. https://psycnet.apa.org/record/1968-35041-000
Fausto-Sterling, A. (2021). A dynamic systems framework for gender/sex development: From sensory input in infancy to subjective certainty in toddlerhood. *Frontiers in Human Neuroscience, 15,* 613789. https://doi.org/10.3389/fnhum.2021.613789
Fini, C., Bardi, L., Bolis, D., Fusaro, M., Lisi, M. P., Michalland, A. H., & Era, V. (2023). The social roots of self development: From a bodily to an intellectual interpersonal dialogue. *Psychological Research, 87*(6), 1683–1695. https://doi.org/10.1007/s00426-022-01785-6
Foels, R., Pappas, C. J. (2004). Learning and unlearning the myths we are taught: Gender and Social Dominance Orientation. *Sex Roles, 50,* 743–757. https://doi.org/10.1023/B:SERS.0000029094.25107.d6
Frisch, H. L. (1977). Sex stereotypes in adult-infant play. *Child Development, 48*(4), 1671–1675. https://www.jstor.org/stable/1128533
Guenther, K., (2022). *The Mirror and The Mind: A History of Self-Recognition in Human Sciences.* Princeton University Press. https://www.jstor.org/stable/j.cdbmfhq1h
Halpern, H. P., & Perry-Jenkins, M. (2016). Parents' gender ideology and gendered behavior as predictors of children's gender-role attitudes: A longitudinal exploration. *Sex Roles, 74,* 527–542. https://doi.org/10.1007/s11199-015-0539-0
Helwig, C. C. (2006). The development of personal autonomy throughout cultures. *Cognitive Development, 21*(4), 458–473. https://doi.org/10.1016/j.cogdev.2006.06.009
Imhoff, R., & Hoffmann, L. (2023). Prenatal sex role stereotypes: Gendered expectations and perceptions of (expectant) parents. *Archives of Sexual Behavior, 52*(3), 1095–1104. https://doi.org/10.1007/s10508-023-02584-9
Jadva, V., Hines, M., & Golombok, S. (2010). Infants' preferences for toys, colors, and shapes: Sex differences and similarities. *Archives of Sexual Behavior, 39*(6), 1261–1273. https://doi.org/10.1007/s10508-010-9618-z
Keller, H. (2011). Autonomy and relatedness revisited: Cultural manifestations of universal human needs. *Child Developmental Perspectives, 6*(1), 12–18. https://doi.org/10.1111/j.1750-8606.2011.00208.x
Keller, H. (2018). Parenting and socioemotional development in infancy and early childhood. *Developmental Review, 50*(Part A), 31–41. https://doi.org/10.1016/j.dr.2018.03.001
Leaper, C., & Friedman, C. K. (2007). The socialization of gender. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 561–587). The Guilford Press. https://psycnet.apa.org/record/2006-23344-022
Lewis, M., & Brooks-Gunn, J. (1979). *Social Cognition and the Acquisition of Self.* Springer. https://link.springer.com/book/10.1007/978-1-4684-3566-5
Lewis, M., Borkenhagen, M. C., Converse, E., Lupyan, G., & Seidenberg, M. S. (2022). What might books be teaching young children about gender? *Psychological Science, 33*(1), 33–47. https://doi.org/10.1177/09567976211024643
Lewis, M., & Ramsay, D. (2004). Development of self-recognition, personal pronoun use, and pretend play during the 2nd year. *Child Development, 75*(6), 1821–1831. https://doi.org/10.1111/j.1467-8624.2004.00819.x
Liu, L., Escudero, P., Quattropani, C., & Robbins, R. A. (2020). Factors affecting infant toy preferences: Age, gender, experience, motor development, and parental attitude. *Infancy : The Official Journal of the International Society on Infant Studies, 25*(5), 593–617. https://doi.org/10.1111/infa.12352
Media, L. M., Fauske, L., Sigurdardottir, S., Feragen, K. J. B., Heggeli, C., & Waehre, A. (2022). 'It was supposed to be a secret': A study of disclosure and stigma as experienced by adults with differences of sex development. *Health Psychology & Behavioral Medicine, 10*(1), 579–595. https://doi.org/10.1080/21642850.2022.2102018
Morawska, A. (2020). The effects of gendered parenting on child development outcomes: A systematic review. *Clinical Child and Family Psychology Review, 23*(4), 553–576. https://doi.org/10.1007/s10567-020-00321-5
Piaget, J. (1954). *The construction of reality in the child.* Basic Books. https://psycnet.apa.org/record/2006-09595-000
Poulin-Dubois, D., Serbin, L. A., & Derbyshire, A. (1998). Toddlers' intermodal and verbal knowledge about gender. *Merrill-Palmer Quarterly, 44*(3), 338–354. https://psycnet.apa.org/record/1998-10856-004
Rosen, K. S. (2016). *Social and Emotional Development: Attachment Relationships and the Emerging Self.* Bloomsbury Academic.
Ross, J., Yilmaz, M., Dale, R., Cassidy, R., Yildirim, I., & Zeedyk, M. S. (2017). Cultural differences in self-recognition: The early development of autonomous and related selves? *Developmental Science, 20*(3), e12387. https://doi.org/10.1111/desc.12387
Sax, L. (2002). How common is intersex? A response to Anne Fausto-Sterling. *The Journal of Sex Research, 39*(3), 174–178. https://doi.org/10.1080/00224490209552139
Serbin, L. A., Poulin-Dubois, D., Colburne, K. A., Sen, M. G., & Eichstedt, J. A. (2001). Gender stereotyping in infancy: Visual preferences for and knowledge of gender-stereotyped toys in the second year. *International Journal of Behavioral Development, 25*(1), 7–15. https://doi.org/10.1080/01650250042000078
Shakin, M., Shakin, D. & Sternglanz, S. H. (1985). Infant clothing: Sex labeling for strangers. *Sex Roles: A Journal of Research, 12*(9–10), 955–964. https://doi.org/10.1007/BF00288097
Stacey, L. (2021). The family as gender and sexuality factor: A review of the literature and future directions. *Sociology Compass, 15*(4), Article e12864. https://doi.org/10.1111/soc4.12864
Stepakoff, S., & Beebe, B. (2023). Maternal Touch as a Channel of Communication at Age Four Months: Variations by Infant Gender and Maternal Depression. *Journal of Nonverbal Behavior, 48*(2), 213–234. http://dx.doi.org/10.1007/s10919-023-00442-9
Stern, M., & Hildebrandt-Karraker, K. (1989). Sex stereotyping of infants: A review of gender labeling studies. *Sex Roles, 20*(9), 501–522. https://doi.org/10.1007/BF00288198
Suddendorf, T., & Butler, D. L. (2013). The nature of visual self-recognition. *Trends in Cognitive Sciences, 17*(3), 121–127. http://dx.doi.org/10.1016/j.tics.2013.01.004
Tamis-LeMonda, C. S., Way, N., Hughes, D., Yoshikawa, H., Kalman, R. K., & Niwa, E. Y. (2008). Parents' goals for children: The dynamic coexistence of individualism and collectivism in cultures and individuals. *Social development, 17*(1), 183–209. https://doi.org/10.1111/j.1467-9507.2007.00419.x

4.2 Temperament and Personality in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Distinguish between temperament and personality, and describe models and types of temperament
- Describe the major environmental influences on temperament and early personality
- Explain Erikson's first and second stage of psychosocial development

Tyler remembers when his older daughter Janelle was born. She was fussy and cried all night, slept at random times throughout the day, and preferred to be held by her father. But now that his second child Monique is here, Tyler cannot believe the difference. Monique seems so content, sleeps soundly, and wakes up happy. She's social and coos happily when others hold her. Tyler wonders why his two daughters are so different. Has he become a better father, so his parenting style has led Monique to feel more secure? Perhaps. But most likely, Janelle and Monique were born with different temperaments, showing different moods and different levels of

activity and sociability.

As Tyler's daughters grow older, he may discover that the differences between them are sustaining and long-lasting, because temperament is often a precursor to personality. However, Tyler's parenting also matters. The way he responds to Janelle and Monique's temperamental and emotional needs can shape how effectively they develop a sense of trust, autonomy, and self-confidence, even in the first few years of life.

In this section, you'll learn more about various theories of temperament, the way temperament unfolds and interacts with the environment, and the way personality begins to form in infants and toddlers.

Models of Temperament

Philosophers from Aristotle to John Locke believed in the notion of the *tabula rasa*—the idea that we are born as blank slates, waiting to be crafted and molded by experience (Petryszak, 1981). Behavioral psychologists have agreed with this perspective, as when John B. Watson (1930, p. 82) stated, "Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select." This view shows the power of experience but misses the biological and genetic traits that interact with their environmental experiences as well as the active role infants have in their own development.

Although experience and environment certainly shape our lives, infants come into this world as unique individuals. One of the characteristics they bring with them is their **temperament**, which consists of the innate biological components of individuality present from birth. Temperamental traits are patterns of behavior that remain consistent and relatively stable throughout infancy and beyond (Goldsmith et al., 1987; Planalp & Goldsmith, 2020).

Easy, Difficult, and Slow-to-Warm-Up Temperaments

Psychology researchers Alexander Thomas and Stella Chess offer nine distinct temperamental traits originally derived by interviewing parents and teachers on their perceptions of infants' behaviors (Thomas & Chess, 1977). Their comprehensive view of temperament begins with identifying an infant as high or low on each of these nine distinct behavioral traits (Figure 4.5). For example, an infant who tends to like a predictable daily routine would be described as high on expression of the rhythmicity trait, and an infant who appears to be shy or withdrawn in new social settings would be described as low on expression of approach. This detailed view of temperament helped to characterize a wider variety of infants' behavior patterns. These nine traits allow researchers to classify an infant's overall temperament into one of three temperament clusters: easy, difficult, or slow to warm up (Rothbart & Bates, 2007; Thomas & Chess, 1977; Rothbart & Bates, 2006).

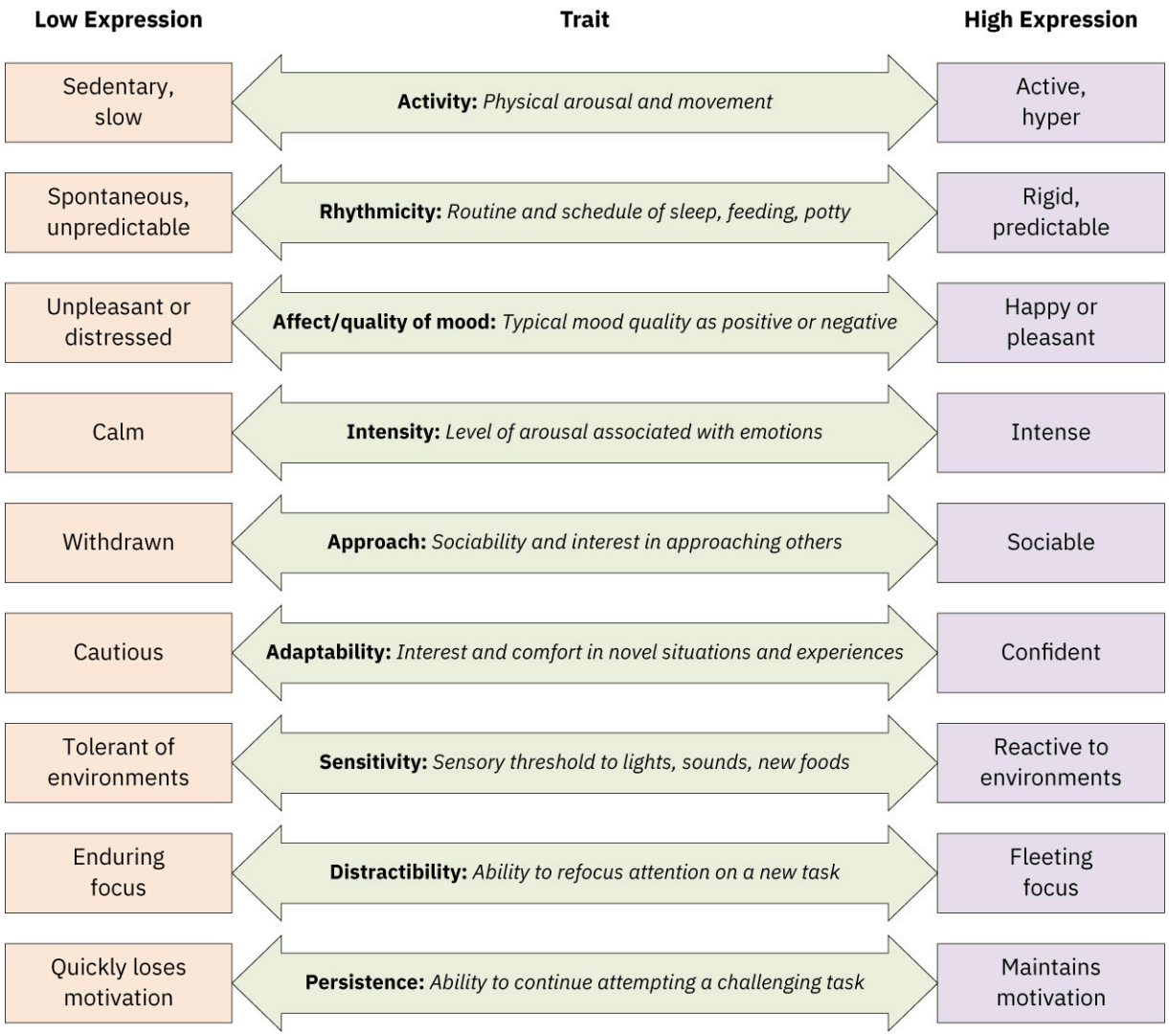


FIGURE 4.5 Thomas and Chess's (1977) temperamental model identifies nine traits. For each trait, infants may span a spectrum from low expression to high expression. (Thomas & Chess, 1977) (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

While not all children fit neatly into one of the temperament clusters, around 65 percent of infants fall into one of the three typically identified: easy (40 percent), difficult (10 percent), and slow to warm up (15 percent) (Chess & Thomas, 1986). In their original research, Chess and Thomas (1986) found that many children demonstrated an **easy temperament** (resilient), meaning they are adaptable, can establish a routine quickly, and typically have a positive mood. For example, an infant high in rhythmicity and affect may have a positive mood and predictable behaviors. More recently, the term "resilient" has been introduced to describe easy infants who tend to be adaptable and able to thrive in a variety of contexts (van Leeuwen et al., 2004). A study noted that resilient children were higher on persistence and dependence on reward and attachment and lower on seeking novelty (Scaini et al., 2021). Encouraging persistence and other factors that promote resilience from an early age may boost long-term resilience and adaptability across the lifespan.

In comparison, an infant with **difficult temperament** (undercontrolled/exuberant) is described as having negative mood, high intensity, and an irregular routine and is slow to adapt to new experiences. More recently, this temperamental style has been referred to as "undercontrolled" or "exhuberant", highlighting that the child's biological disposition might clash with that of the parents, resulting in what might be perceived as defiance (Komsi et al., 2006; Stifter et al., 2008). An undercontrolled or exuberant child is likely to struggle to develop self-regulation or effortful control, but these skills can be developed both as the brain matures and

with parental support (Bates et al., 2019).

Finally, an infant who has a **slow-to-warm-up temperament** (overcontrolled/inhibited) has a pleasant disposition but particularly low adaptability; if conditions are stable, such infants are content, but when novel events occur, they become cautious and possibly withdrawn. Adults often describe this type of infant or toddler as shy. More recently, the terms "overcontrolled" and "inhibited" have been used to highlight that these infants may be more prone to anxious or fearful behavior patterns (Komsi et al., 2006; Stifter et al., 2008). They may have very high levels of behavioral inhibition, or the tendency to withdraw or be cautious, which is likely to have strong genetic roots (Kagan, 1984). However, here again research shows that even though these infants are likely to stay inhibited and shy decades later, they can still improve their emotion regulation and social skills with supportive environments and time (Suarez et al., 2021; Tang et al., 2020).

All infants will be distractible at some times and focused at others and have a range of moods and activity levels. For example, having occasional tantrums does not mean an infant has a difficult temperament. However, the infant's trends and preferences show the beginnings of their temperament and shape their experience in the environment.

LINK TO LEARNING

Review this video on temperamental traits (https://openstax.org/r/104Temperamental) to learn more about original research by Thomas and Chess.

Surgency, Negative Affectivity, and Effortful Control

Psychologist Mary Rothbart (1981) used the initial theory of temperament to develop detailed questionnaires on infant and toddler behavior and identified three temperamental traits with a strong biological basis: surgency, negative affectivity, and effortful control. Also called extraversion, **surgency** is a trait characterized by high levels of physical activity, sociability, and spontaneity. In contrast, **negative affectivity** is a tendency to experience and express distress, discomfort, and avoidance behavior and is associated with lower emotion regulation. Finally, **effortful control** includes traits related to impulse control and inhibition, including the ability to maintain attention and control responses to experiences. According to Rothbart (2007), these traits exist in different combinations. For instance, surgency corresponds to both activity and sociability, and effortful control corresponds to both distractibility and persistence. For instance, an infant who is high in both surgency and negative affectivity would be prone to anger, but an infant low in surgency but high in effortful control may enjoy quiet enduring tasks such as puzzles and cognitive toys (Shiner et al., 2012). Rothbart's theory of temperament laid the groundwork for more scientific studies of temperament including the things that influence temperament and the stability of temperament over time (Planalp & Goldsmith, 2020; Putnam & Stifter, 2008).

Environmental Influences on Temperament

Although temperamental traits are biologically innate in infancy, environmental and contextual factors also play a role in their expression, perhaps increasingly so as we age (Goldsmith et al., 1987). The way parents respond to infants can modify their temperamental expressions, either reinforcing or discouraging them.

Imagine an infant high in approach and adaptability and low in sensitivity whose parent likes to travel and go to new places. This infant may feel comfortable accompanying the parent to new parks, airports, and cities because they enjoy new people, places, and experiences. Thus, the parent's behavior is reinforcing the infant's temperament. This situation is described as high in **goodness of fit**, meaning the infant's temperament and surrounding environment match and complement each other (Thomas & Chess, 1977).

Now imagine an infant high in activity and distractibility and low in persistence whose parent likes to work at home. This infant may want to move around, discover new things, and constantly shift attention and focus. However, the parent may encourage the infant to settle in one place and focus on a task for a long period of

time. This behavior is discouraging the infant's biologically based temperament, and the situation is therefore low in goodness of fit because the parent and infant are mismatched in terms of behavioral desires.

Temperamental differences between parents and children aren't necessarily a bad thing; parents can support goodness of fit while also encouraging the child to develop a bit more adaptability through experience. For example, a parent who prefers to be more sedentary can make it a point to get up and move with or engage in a brief activity with the child, while also showing the child the joys of relaxing together.

Goodness of fit has often been used in parent-child relationship research and applications to describe the way different temperament types (easy, difficult, and slow to warm up) interact with one another and with the environment (de Schipper et al., 2004; Mangelsdorf et al., 1990; De Schipper et al., 2004). An infant with easy temperament and a parent with easy temperament are likely to form a high goodness of fit in many circumstances. Infants' difficult temperaments may strain goodness of fit, particularly if the parent also has a difficult temperament. Such infants are likely to benefit from the parents staying calm, responding in caring ways, and avoiding power assertion parenting strategies (Lunkenheimer et al., 2020; Rodriguez et al., 2019). Finally, a slow-to-warm up baby is likely to benefit from having more time to adapt to new situations (Natsuaki et al., 2013). Although much of our temperament is genetically based, parents' temperaments and their role in creating goodness of fit can positively shape long-term healthy development by providing the child with skills that help them individually thrive.

LINK TO LEARNING

Want to learn more about creating goodness of fit and the match between caregiver temperament and infant/toddler temperament? This website provides temperament toolkits (https://openstax.org/r/104TemprmtTools) to help caregivers learn about their own temperament and the temperaments of the infants and toddlers they care for. Also provided are individualized tips for creating a better match.

Cultural influences may also have an impact on shaping temperament. Gonda and colleagues (2010) found that highly active temperaments were more common in Portugal, negative mood was more prevalent in Lebanon, and more intense mood swings were more common in Korea. One possible explanation for these findings is that cultural values may select the behaviors in infants that are encouraged or discouraged (Haslam et al., 2020). For example, some parents may emphasize proximity or dependence as a value, while others may emphasize independence. However, these differences may not develop in infancy. Comparisons of U.S. and Spanish adults have found that those in the United States were more motivated by new experiences and challenging tasks, whereas Spanish individuals were more motivated by rewards and the avoidance of punishments. These differences were more pronounced in later childhood (Al-Halabi et al., 2011).

Our environment and temperament interact with one another at every level of social and cultural experience to shape our developmental outcomes over time. A strong goodness of fit at the family level and a good cultural fit represent an easier interaction between individual and context.

LIFE HACKS

A Goodness of Fit for Everyone

Every infant is unique in terms of temperamental style, so promoting a high goodness of fit means being aware of the environmental needs of each temperamental type. Caregivers also demonstrate their own temperament and personality style, so finding a good match between the infant and caregiver can help both caregiver and child to develop a healthy relationship and promote the child's developmental well-being overall.

Easy/resilient babies are adaptable and easygoing, so providing enjoyable stimulation, new experiences, and small challenges is a great way to inspire their developing minds. Such activities can include walking around the

neighborhood to discover new parks and street scenes, playing music at home, and engaging in sensory play with baby-safe materials.

Difficult/undercontrolled infants have strong emotions and unpredictable patterns and need more patience and flexibility. This means practicing calming and relaxing techniques such as giving the infant a relaxing bath or rocking and carrying them frequently. Another useful strategy is preparing meals ahead of time, so that when emotions flare up, caregivers can pause long enough to help calm the infant down.

Slow-to-warm-up/overcontrolled infants are nervous and sensitive and need some extra reassurance at times. Introducing them gradually to new foods, letting them have some quiet time during big family events, and allowing them to keep a familiar toy or blanket nearby are ways of helping them feel safer and more secure. Recognizing that they may have a favorite person they want next to them and not rushing them into hugging and playing with relatives can also help.

Overall, it's important that the caregiver works to know their own temperament as well as that of the infant to find those areas where they are compatible and those areas where they may have different temperamental traits. Caregivers can then adjust some of their caregiving techniques to best support their child. Remember, the caregiver typically has many more emotional and social coping techniques and tools than the infant or toddler. Therefore, a caregiver adapting to meet the child's needs can improve relationship quality and goodness of fit for everyone.

Early Personality

Temperament is a building block of personality, but what is personality? An individual's **personality** consists of patterns of behavior, attitudes, thoughts, and emotions that are consistent across contexts in childhood, adolescence, and adulthood. Temperament is visible as observable behaviors readily assessed in infancy, whereas personality also includes internal motivation, desires, and preferences. Personality and temperament both involve inherited traits and are relatively stable over time (Planalp & Goldsmith, 2020).

Theories of personality vary widely, but most trait theories propose a set of traits or personality characteristics that are stable in individuals across place, time, and social interactions and exist on a spectrum from high to low. This is similar to the nine temperament traits discovered by Thomas and Chess (1977). One early trait theory that helped connect infant/toddler temperament to emerging personality came from psychologists Hans and Sybil Eysenck. The Eysencks (Eysenck, 1990, 1992; Eysenck & Eysenck, 1963) viewed people as having two specific personality dimensions: extroversion/introversion and neuroticism/stability. Extroversion/introversion is related to being sociable and outgoing or shy and preferring solitude. Neuroticism/stability is related to being more or less emotionally and behaviorally regulated. A later prominent trait theory is the Big Five Factor theory, which posits five personality traits that appear in early childhood and endure throughout the lifespan (Donahue, 1994). They are openness, conscientiousness, extraversion, agreeableness, and neuroticism. This theory is reviewed more fully in 6.1 Social and Emotional Development in Early Childhood.

As children grow, their personality develops from their temperament in various ways (Rothbart et al., 2000), and some components of infant temperament have been associated with personality later in life. For instance, high sociability in infancy is positively correlated with high extraversion later, characterized by an outgoing, talkative, confident demeanor (Hampson, 2007). Emotional intensity in infancy is associated with neuroticism, and early persistence is linked with conscientiousness (Strickhouser & Sutin, 2020). As children mature and gain experience with the environment, their temperament characteristics will shift slightly over time. For example, when their caregiver provides goodness of fit and supports the infant's emotional needs, the infant is likely to develop better emotion regulation and control over time.

Psychosocial Development

Many of the major theories you learned about in Chapter 1 Lifespan Psychology and Developmental Theories

are considered grand theories, theories that attempt to explain universal experiences. Erik Erikson's theory of psychosocial development is a grand theory that helps explain how personality and individuality change over the entire lifespan through a series of developmental stages (Erikson, 1985).

Erikson's psychosocial theory of development (1985) grew out of Sigmund Freud's earlier theory of infant psychosexual development. Erikson's theory indicates psychological development continues throughout the lifespan beginning with the psychological interactions between an infant and their caregiver and continues into late adulthood.

According to Erikson, the lifespan includes eight distinct stages, each containing a significant psychological dilemma the person needs to resolve (Figure 4.6). Each dilemma can result in either an adaptive or a maladaptive consequence. For example, if a child's caregivers are not supportive over their early needs, they may struggle with trusting others (maladaptive), whereas a child whose caregivers were generally supportive is more likely to trust those around them more easily (adaptive). However, if a person initially experiences the maladaptive consequence, they can later readdress this dilemma at a subsequent stage (Johnson, 1993; Zock, 2018). For example, if an infant initially developed distrust, they may be able to gain a trusting relationship with others through early intervention and supportive caregiving. It should be noted, however, that while a maladaptive outcome may be corrected later, early support and healthy development from the start are typically ideal and easiest. Erikson's theory is often portrayed as a series of steps; each developmental period represents the earliest point a dilemma is encountered, but individuals can go backward down the steps and resolve earlier dilemmas at later times (Gilleard & Higgs, 2016).

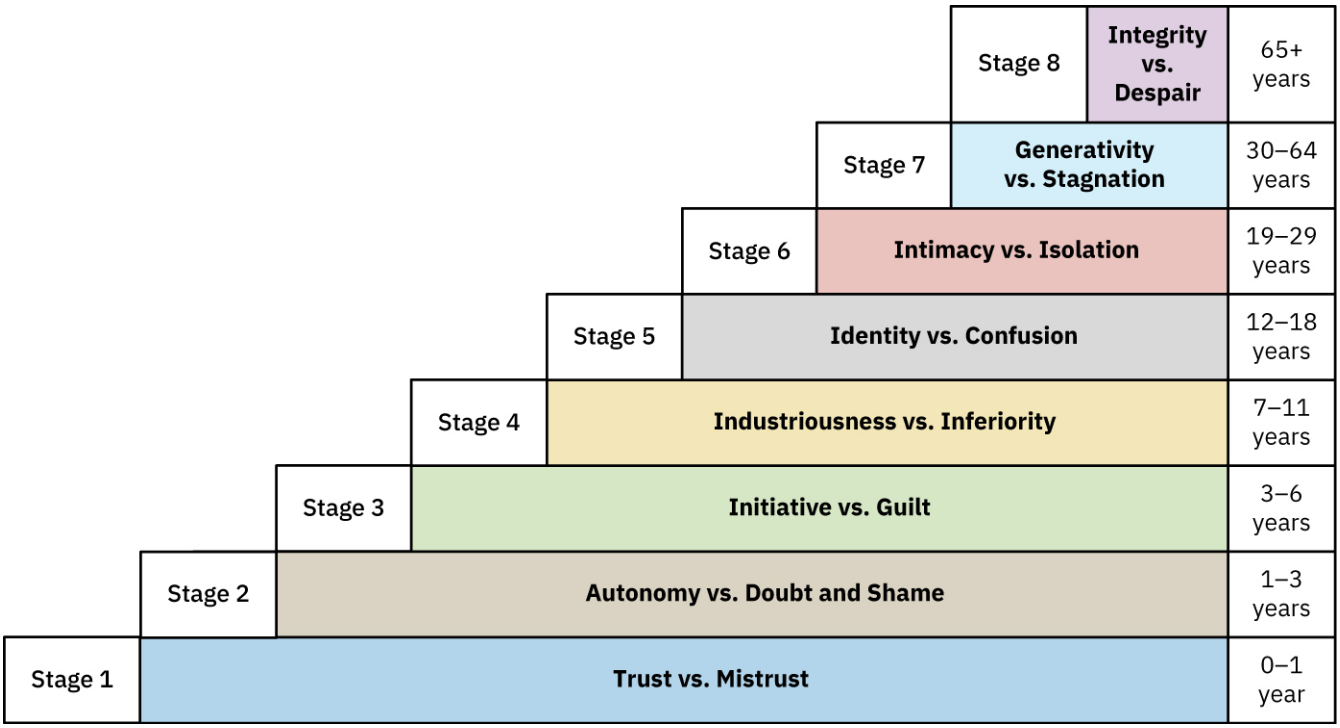


FIGURE 4.6 Erikson's psychosocial theory of development identifies eight stages, or developmental tasks, encountered at different points in the lifespan. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The first stage of psychosocial development in Erikson's theory is **trust versus mistrust**, and it occurs from approximately age 0 to 1 year. At this stage, infants are reliant on caregivers to keep them warm, dry, fed, and safe. If a caregiver readily meets their infant's needs, responds to their cries, and is a reliable source of comfort, the infant will likely develop a sense of trust. If cries are unmet and caregivers' actions are unpredictable, the infant may instead develop a sense of mistrust toward their caregiver and in other relationships in future (Beebe & Steele, 2013). Because individuals can resolve earlier dilemmas later with

intervention and support, however, a child who did not acquire trust in the first year of life or who experienced adversity can still develop trust in a caregiver who meets and responds to their needs consistently (Nusser et al., 2023).

IT DEPENDS

Will Picking Up a Baby Spoil Them?

You may have heard that picking up a baby and responding each time they cry will lead the baby to become "spoiled" or over reliant on the care of others. However, research on the physical, psychological, and emotional needs of infants has shown that this is not true. Infants will not cry to manipulate their caregivers, though they may cry because they are hungry, wet, cold, lonely, or scared (Rosier & Cassels, 2021; Wilson et al., 1981). Moreover, infants who are cuddled more in the first few months tend to cry less later, suggesting that picking up and responding to an infant is helpful to their sleep habits and regulation (Middlemiss et al., 2017) (Figure 4.7).

FIGURE 4.7 A caregiver holding and comforting an infant when they cry can help the infant build the foundations of self-regulation and emotion regulation. (credit: "wisdom kissing ozare" by "cheriejoyful"/Flickr, CC BY 2.0)

But what happens if a caregiver cannot respond every time, or if they are too exhausted to respond? The cry-it-out approach is intended to teach an infant to self-soothe between six and eighteen months and is a common method some parents use. Some research indicates the cry-it-out approach is not linked to insecure attachment or behavioral problems in toddlerhood (Bilgin & Wolke, 2020; Davis & Kramer, 2021). Therefore, picking up and cuddling an infant, or giving them some time to calm down on their own, might both be fine given the right circumstances and the infant's age. Many infants begin to show the ability to self-soothe around six months of age (Goodlin-Jones et al., 2001). In general, being aware of an infant's cries, being responsive when an infant signals they need comfort, and giving them time to self-soothe when they are able can be a great strategy for long-term good sleep and well-being for all (Hada et al., 2021; Middlemiss et al., 2017).

Erikson's second stage is **autonomy versus doubt**, from ages one to three years. As toddlers grow and develop new skills, many attempt to dress and feed themselves and to assert their opinions about what they would like to do. Caregivers who encourage toddlers to try new activities and build self-confidence may foster a positive sense of autonomy, giving toddlers assurance that they can achieve age-appropriate tasks on their own. However, caregivers who intervene, intrude, and prevent a toddler from attempting new skills may foster a sense of self-doubt or shame, which might prevent the child from attempting new and challenging tasks in the future (Andreadakis et al., 2019). Caregivers can help a toddler struggling with this stage by encouraging them to try new skills, challenging them in small and comfortable ways, and remaining patient and calm.

LINK TO LEARNING

Do you think you have a good idea of Erikson's stages? Try this short matching game on Erikson's eight stages (https://openstax.org/r/104EriksonStges) to practice.

References

Al-Halabi, S., Herrero, R., Saiz, P. A., Garcia-Portilla, M. P., Errasti, J. M., Corcoran, P., Bascaran, M. T., Bousono, M., Lemos, S., & Bobes, J. (2011). A cross-cultural comparison between Spain and the USA: Temperament and character distribution by sex and age. *Psychiatry Research, 186*(2–3), 397–401. https://doi.org/10.1016/j.psychres.2010.07.021

Andreadakis, E., Joussemet, M., & Mageau, G. A. (2019). How to support toddlers' autonomy: Socialization practices reported by parents. *Early Education and Development, 30*(3), 297–314. https://doi.org/10.1080/10409289.2018.1548811

Bates, J. E., McQuillan, M. E., & Hoyniak, C. P. (2019). Parenting and temperament. In M. H. Bornstein (Ed.), *Handbook of parenting: Children and parenting* (3rd ed., pp. 288–321). Routledge/Taylor & Francis Group. https://doi.org/10.4324/9780429440847-9

Beebe, B., & Steele, M. (2013). How does microanalysis of mother-infant communication inform maternal sensitivity and infant attachment? *Attachment & Human Development, 15*(5–6), 583–602. https://doi.org/10.1080/14616734.2013.841050

Bilgin, A., & Wolke, D. (2020). Parental use of 'cry it out' in infants: No adverse effects on attachment and behavioural development at 18 months. *Journal of Child Psychology and Psychiatry, 61*(11), 1184–1193. https://doi.org/10.1111/jcpp.13223

Chess, S., & Thomas, A. (1986). *Temperament in clinical practice.* Guilford Press. https://www.guilford.com/books/Temperament-in-Clinical-Practice/Chess-Thomas/9780898628135

Davis, A. M. B., & Kramer, R. S. S. (2021). Commentary: Does 'cry it out' really have no adverse effects on attachment? Reflections on Bilgin and Wolke (2020). *The Journal of Child Psychology & Psychiatry, 62*(12), 1488–1490. https://doi.org/10.1111/jcpp.13390

De Schipper, J. C., Tavecchio, L.W. C., Van IJzendoorn, M. H., & Van Zeijl, J. (2004). Goodness-of-fit in center day care: Relations of temperament, stability and quality of care with the child's adjustment. *Early Childhood Research Quarterly, 19*(2), 257–272. https://doi.org/10.1016/j.ecresq.2004.04.004

Donahue, E. M. (1994). Do children use the Big Five, too? Content and structural form in personality description. *Journal of Personality, 62*(1), 45–66. https://doi.org/10.1111/j.1467-6494.1994.tb00794.x

Erikson, E. H. (1985). *The life cycle completed: A review.* W. W. Norton & Co. https://psycnet.apa.org/record/1994-98893-000

Eysenck, H. J. (1990). An improvement on personality inventory. *Current Contents: Social and Behavioral Sciences, 22*(18), 20.

Eysenck, H. J. (1992). Four ways five factors are not basic. *Personality and Individual Differences, 13*(6), 667–673. https://doi.org/10.1016/0191-8869(92)90237-J https://www.sciencedirect.com/science/article/abs/pii/019188699290237J

Eysenck, S. B. G., & Eysenck, H. J. (1963). The validity of questionnaire and rating assessments of extroversion and neuroticism, and their factorial stability. *British Journal of Psychology, 54*(1), 51–62. https://doi.org/10.1111/j.2044-8295.1963.tb00861.x

Gilleard, C., & Higgs, P. (2016). Connecting life span development with the sociology of the life course: A new direction. *Sociology, 50*(2), 301–315. https://doi.org/10.1177/0038038515577906

Goldsmith, H. H., Buss, A. H., Plomin, R., Rothbart, M. K., Thomas, A., Chess, S., Hinde, R. A., McCall, R. B. (1987). Roundtable: What is temperament? Four approaches. *Child Development, 58*(2), 505–529. https://www.jstor.org/stable/1130527

Gonda, X., Vázquez, G. H., Akiskal, K. K., & Akiskal, H. S. (2010). From putative genes to temperament and culture: Cultural characteristics of the distribution of dominant affective temperaments in national studies. *Journal of Affective Disorders, 131*(1–3), 45–51. https://doi.org/10.1016/j.jad.2010.12.003

Goodlin-Jones, B. L., Burnham, M. M., Gaylor, E. E., & Anders, T. F. (2001). Night waking, sleep-wake organization, and self-soothing in the first year of life. *Journal of Developmental and Behavioral Pediatrics, 22*(4), 226–233. https://doi.org/10.1097/00004703-200108000-00003

Hada, A., Imura, M., & Kitamura, T. (2021). Parent to baby emotions: Parental immediate emotional reactions towards infant crying. *The Open Psychology Journal, 14*(1), 338–341. http://dx.doi.org/10.2174/1874350102114010338

Hampson, S. E., Andrews, J. A., Barckley, M., & Peterson, M. (2007). Trait Stability and Continuity in Childhood: Relating Sociability and Hostility to the Five-Factor Model of Personality. *Journal of Research in Personality, 41*(3), 507–523. https://doi.org/10.1016/j.jrp.2006.06.003

Haslam, D., Poniman, C., Filus, A., Sumargi, A., & Boediman, L. (2020). Parenting style, child emotion regulation and behavioral problems: The moderating role of cultural values in Australia and Indonesia. *Marriage & Family Review, 56*(4), 320–342. https://doi.org/10.1080/01494929.2020.1712573

Johnson, J. G. (1993). Relationships between psychosocial development and personality disorder symptomatology in late adolescents. *Journal of Youth and Adolescence, 22*, 33–42. https://psycnet.apa.org/doi/10.1007/BF01537902

Kagan, J. (1984). *The nature of the child.* Basic Books. https://archive.org/details/natureofchild00kaga

Komsi, N., Räikkönen, K., Pesonen, A.-K., Heinonen, K., Keskivaara, P., Järvenpää, A.-L., & Strandberg, T. E. (2006). Continuity of temperament from infancy to middle childhood. *Infant Behavior & Development, 29*(4), 494–508. https://doi.org/10.1016/j.infbeh.2006.05.002

Lunkenheimer, E., Hamby, C. M., Lobo, F. M., Cole, P. M., & Olson, S. L. (2020). The role of dynamic, dyadic parent–child processes in parental socialization of emotion. *Developmental Psychology, 56*(3), 566–577. https://doi.org/10.1037/dev0000808

Mangelsdorf, S., Gunnar, M., Kestenbaum, R., Lang, S., & Andreas, D. (1990). Infant proneness-to-distress temperament, maternal personality, and mother-infant attachment: Associations and goodness of fit. *Child Development, 61*(3), 820–831. https://doi.org/10.2307/1130966

Middlemiss, W., Stevens, H., Ridgway, L., McDonald, S., & Koussa, M. (2017). Response-based sleep intervention: Helping infants sleep without making them cry. *Early Human Development, 108*, 49–57. http://dx.doi.org/10.1016/j.earlhumdev.2017.03.008

Natsuaki, M. N., Leve, L. D., Harold, G. T., Neiderhiser, J. M., Shaw, D. S., Ganiban, J., Scaramella, L. V., & Reiss, D. (2013). Transactions between child social wariness and observed structured parenting: Evidence from a prospective adoption study. *Child Development, 84*(5), 1750–1765. https://doi.org/10.1111/cdev.12070

Nusser, L., Zimprich, D., & Wolf, T. (2023). Themes of trust, identity, intimacy, and generativity in important autobiographical memories: Associations with life periods and life satisfaction. *Journal of Personality, 91*(5), 1110–1122. https://doi.org/10.1111/jopy.12786

Petryszak, N. G. (1981). Tabula rasa—its origins and implications. *Journal of the History of the Behavioral Sciences, 17*(1), 15–27. https://doi.org/10.1002/1520-6696(198101)17:1%3C15::AID-JHBS2300170104%3E3.0.CO;2-3

Planalp, E. M., & Goldsmith, H. H. (2020). Observed Profiles of Infant Temperament: Stability, Heritability, and Associations With Parenting. *Child Development, 91*(3), e563–e580. https://doi.org/10.1111/cdev.13277

Putnam, S. P., & Stifter, C. A. (2008). Reactivity and regulation: The impact of Mary Rothbart on the study of temperament. *Infant and Child Development, 17*(4), 311–320. https://doi.org/10.1002/icd.583

Rodriguez, C. M., Wittig, S. M. O., & Christl, M.-E. (2019). Psychometric evaluation of a brief assessment of parents' disciplinary alternatives. *Journal of Child and Family Studies, 28*, 1490–1501. https://doi.org/10.1007/s10826-019-01387-8

Rosier, J. G., & Cassels, T. (2021). From "Crying Expands the Lungs" to "You're Going to Spoil That Baby": How the Cry-It-Out Method Became Authoritative Knowledge. *Journal of Family Issues, 42*(7), 1516–1535. https://doi.org/10.1177/0192513X20949891

Rothbart, M. K. (1981). Measurement of temperament in infancy. *Child Development, 52*(2), 569–578. https://doi.org/10.2307/1129176

Rothbart, M. K. (2007). Temperament, development, and personality. *Current Directions in Psychological Science: A Journal of the American Psychological Society, 16*(4), 207–212. https://doi.org/10.1111/j.1467-8721.2007.00505.x

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78*(1), 122–135. https://doi.org/10.1037/0022-3514.78.1.122

Rothbart, M. K., & Bates, J. E. (2006). Temperament. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), Handbook of child psychology: *Social, emotional, and personality development* (6th ed., pp. 99–166). John Wiley & Sons. https://psycnet.apa.org/record/2006-08776-003

Scaini, S., Caputi, M., Giani, L., & Forresi, B. (2021). Temperament profiles to differentiate between stress-resilient and stress-affected children during Covid-19 pandemic. *Psychology Hub, 38*(3), 7–16. https://dx.doi.org/10.13133/2724-2943/17582

Shiner, R. L., Buss, K. A., McClowry, S. G., Putnam, S. P., Saudino, K. J., & Zentner, M. (2012). What is temperament now? Assessing progress in temperament research on the twenty-fifth anniversary of Goldsmith et al. (1987). *Child Development Perspectives, 6*(4), 436–444. https://doi.org/10.1111/j.1750-8606.2012.00254.x

Stifter, C. A., Putnam, S., & Jahromi, L. (2008). Exuberant and inhibited toddlers: Stability of temperament and risk for problem behavior. *Development and Psychopathology, 20*(2), 401–421. https://doi.org/10.1017/S0954579408000199

Strickhouser, J. E., & Sutin, A. R. (2020). Family and neighborhood socioeconomic status and temperament development from childhood to adolescence. *Journal of Personality, 88*(3), 515–529. http://dx.doi.org/10.1111/jopy.12507

Suarez, G. L., Morales, S., Miller, N. V., Penela, E. C., Chronis-Tuscano, A., Henderson, H. A., & Fox, N. A. (2021). Examining a developmental pathway from early behavioral inhibition to emotion regulation and social anxiety: The moderating role of parenting. *Developmental Psychology, 57*(8), 1261–1273. https://doi.org/

10.1037/dev0001225
Tang, A., Crawford, H., Morales, S., Degnan, K. A., Pine, D. S., & Fox, N. A. (2020). Infant behavioral inhibition predicts personality and social outcomes three decades later. *Proceedings of the National Academy of Sciences, 117*(18), 9800–9807. https://doi.org/10.1073/pnas.1917376117
Thomas, A., & Chess, S. (1977). Temperament and development. Brunner/Mazel. https://www.cambridge.org/core/journals/psychological-medicine/article/abs/temperament-and-development-by-a-thomas-and-s-chess-pp-270-illustrated-1350-brunnermazel-new-york-1977/68C80488EF21E565234A7E911678FC00
Van Leeuwen, K., De Fruyt., F., & Mervielde, I. (2004). A longitudinal study of the utility of the resilient, overcontrolled, and undercontrolled personality types as predictors of children's and adolescents' problem behaviour. *International Journal of Behavioral Development 28*(3), 210–220. https://doi.org/10.1080/01650250344000424
Watson, J. B. (1930). *Behaviorism* (Rev. ed.). W. W. Norton & Co. https://psycnet.apa.org/record/1931-00040-000
Wilson, A. L., Witzke, D. B., & Volin, A. (1981). What it means to "spoil" a baby: Parents' perception. *Clinical Pediatrics, 20*(12) 798–802. https://doi.org/10.1177/000992288102001208
Zock, H. (2018). Human development and pastoral care in a postmodern age: Donald Capps, Erik H. Erikson, and beyond. *Journal of Religion and Health, 57*(2), 437–450. https://doi.org/10.1007/s10943-017-0483-0

4.3 Emotional Development in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Discuss the relationship between emotion, mood, and emotion regulation
- Distinguish between primary and secondary emotions
- Identify the important early milestones in emotion regulation

Kylie has been close to her nephew Jack since he was a newborn. In his infancy, Jack seemed to express only a few emotions, by either crying or smiling. By his first birthday, when he could play with his toys or feed himself, he clearly showed happiness over his skills. He also showed signs of sadness and distress when he was tired or overwhelmed. When Jack was two years old, Kylie noticed that he started to demonstrate other emotions, like shyness around new people and pride when he dressed himself.

As Jack's emotions became more complex, he also developed the ability to cope with and control them. At first, he was limited to looking away, turning his head, or sucking his pacifier. Later, Kylie would watch him rub his blankets or his hair to calm down. As he grew, Jack started to display typical toddler behaviors such as tantrums, which included wiggling, screaming, and running away to express himself.

At each stage in his development, Kylie needed to shift her approach to help support Jack with his emotions, sometimes giving him comfort, and sometimes giving him space and time. Luckily, she also learned how to anticipate and predict his emotions, noting his cues when he was tired or overstimulated, or when he was becoming frustrated and angry. Understanding infant emotions can help caregivers provide sensitive and responsive care that can ensure a supportive home environment. This section discusses the development of emotions during the first few years of life and the emergence of the ability to regulate and identify emotions.

LIFE HACKS

Understanding Temper Tantrums

Ever hear of the terrible twos? The "terrible twos" is a term used in some countries to describe the increased independence and tantrums sometimes seen in toddlers. While toddlers are learning to say "no" and struggling with emotions, these tantrums can be quite manageable for those with a bit of lifespan development knowledge. Toddlers often become frustrated if they are overstimulated or tired, so those late afternoon outbursts may be a sign that they need some quiet time or a nap. Sometimes a snack can help too. Because they are still learning to communicate, toddlers can often feel misunderstood, so paying attention to their body language, especially any pointing or grunting, can help you anticipate their needs and prevent a misunderstanding. A good routine and promoting goodness of fit may even prevent many tantrums from ever happening. For example, prioritizing a regular bedtime for a toddler over a late-night social occasion may avoid a grumpy morning.

Toddlers are often seeking autonomy, or control over themselves, and tantrums can erupt when they feel forced to go to bed, get into the car, or eat their food when they have other priorities. Giving a toddler a sense of choice, even if it's a false choice, can help them feel better. For instance, if a toddler resists getting dressed, you can ask if they'd like to put on their left or right sock first. This opportunity for choice gives toddlers a sense of autonomy so they are less likely to have a tantrum. Allowing them to try to do things for themselves, like feeding, dressing,

and tidying toys, can also help give toddlers a sense of autonomy that can alleviate a tantrum. You could even let them leave the house in those clothes that don't match if they seem proud of their fashion choice.

When a temper tantrum occurs (and they will), stay calm. Some toddlers prefer to cuddle to help calm them, but others don't want to be touched because they already feel overstimulated. Make sure they are physically safe and not near any hazards. Give them time to cry and release their emotions. If they are crying because they want something they should not have, don't reward them by letting them have it; instead, find another reward to give them once they are calm. Most important, try not to scream or get agitated yourself. This response will only escalate emotions and make the tantrum last longer.

Emotions

An **emotion** is the temporary affective state or feelings that influence our physiology, facial expressions, and motivations. In the first month of life, infants tend to show two emotional states: pleasure and displeasure (Watson & Tellegen, 1985). These two states differ by whether an infant is looking away or toward, is reaching or avoiding, and is calm or in distress (sometimes referred to as approach or withdrawal). By the end of the first year of life, infants can typically express a variety of emotions such as joy, sadness, anger, and fear. An infant may have a relatively stable and calm temperament or mood, but they can still experience a variety of emotions in a short window of time.

Mood and Arousal

It can be a challenge to distinguish between an infant's moods and emotions when both involve our affect, or underlying feelings. Our **moods** are long-lasting dispositions that describe our level of arousal and pleasure (Figure 4.8). Like the temperamental dimensions of affect and intensity, moods describe an infant's typical level of arousal and pleasure along two continuous spectrums (Hay, 2019; Yik et al., 1999). An infant who is experiencing a high level of arousal and a high level of pleasure might be described as in an excited mood, whereas an infant with low arousal and low pleasure might be lethargic in mood. An infinite number of points along both these dimensions can describe infant mood.

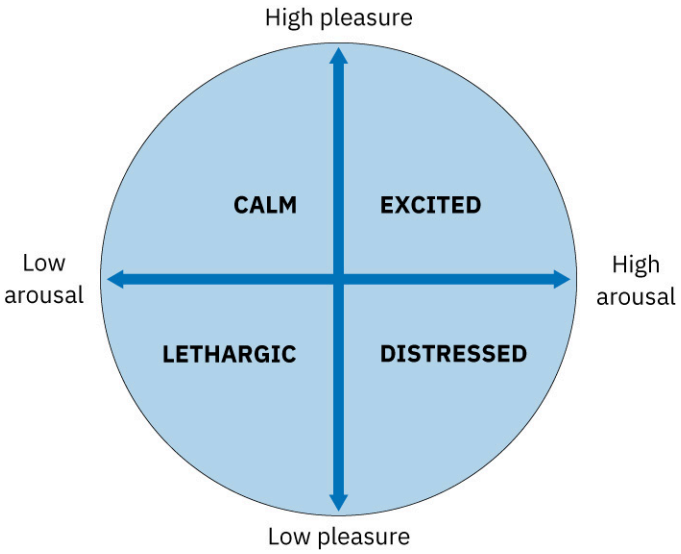


FIGURE 4.8 This bi-directional view of mood allows us to plot an infinite number of points along the two dimensions of pleasure and arousal. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In the first weeks after birth, infants' levels of arousal can also be described as various states of consciousness. Pediatrician Berry Brazelton identified six discrete states of infant arousal ranging from deep sleep to active alert (Brazelton, 1973). Initially, these six states help describe an infant as sleeping soundly or lightly, awake

but drowsy, alert, or very active. Over the course of the first year, new emotional states gradually start to emerge that are different from Brazelton's six stages. The first is a heightened sense of pleasure or joy that emerges around three to five months of age, and the second is a more potent sense of distress or displeasure, apparent around six to eight months of age (Hay, 2019).

Primary Emotions

Although adults can experience more than 220 unique emotions, Paul Ekman (1992, 1999) identified six **primary emotions**, biologically based feelings that appear early in the first year of life and are associated with distinct and universal facial expressions (Table 4.2). That is, people across cultures can recognize the facial expressions of primary emotions. These primary emotions are found in nearly all human cultures and are also displayed by individuals who are blind from birth, suggesting they are biologically innate. In other words, across cultures and individual differences, many individuals show these same facial expressions corresponding to each of the six primary emotions. Another theorist, Carroll Izard (1977, 1991), initially identified ten primary emotions that appear early in infancy, and Robert Levenson identified emotions that have evolutionary adaptive features (Mauss et al., 2005). Although each of these theories is unique, they have considerable overlap and agree on the existence of six primary emotions: joy, sadness, fear, anger, disgust, and surprise (Tracy & Randles, 2011).

Emotion	Facial Expression
Joy	Individual smiles, raises cheekbones, creases corners of the eyes
Sadness	Individual frowns, raises inner eyebrows, and may show tears
Fear	Individual widens eyes and stretches corners of the mouth
Anger	Individual moves eyebrows and corners of the mouth downward
Disgust	Individual crinkles nose, closes eyes, and may stick out tongue
Surprise	Individual widens eyes and opens mouth wide

TABLE 4.2 Primary Emotions in Infancy (source: Hay, 2019)

LINK TO LEARNING

Review this short video about how theories of early emotions gave us our current idea of primary emotions (https://openstax.org/r/104EmotTheories) to learn more.

Secondary Emotions

Primary emotions can help infants communicate their needs, but there is a limit to how much they can express. Starting around eighteen months, secondary emotions begin to emerge (Lewis & Sullivan, 2005). Complex and specific to the situation, **secondary emotions** require infants to have a sense of self and therefore know who they are as opposed to who others are. Secondary emotions include emotions such as pride, embarrassment, jealousy, and empathy.

Secondary emotions in which a toddler becomes aware of how others view them are called **self-conscious emotions**. A toddler who believes they are viewed positively by others may feel emotions such as pride and confidence. If aware they are viewed negatively by others, they may feel emotions such as guilt, shame, or embarrassment.

Secondary emotions can also correspond to the way infants perceive others (Trevarthen, 2005). With these

other-evaluative emotions, or relational emotions, infants can judge others positively, such as with love and empathy (Lewis et al., 1989; Park & Lewis, 2021). Other-evaluative emotions that judge others negatively include jealousy and envy.

Emotion Regulation

Emotions are powerful and can be overwhelming. In infancy, regulating emotions is a difficult task because infants are limited in their coping strategies (Thomas et al., 2017). The ability to calm ourselves and move from a state of high arousal to a state of lower arousal is called **emotion regulation**. Infants are often dependent on their caregiver to help them calm down, with the caregiver and child forming a dyad, or a pair of individuals who influence one another. A good means for doing so is a process called **dyadic regulation**, in which a caregiver calmly holds, cuddles, and touches an infant to help them slow their breathing and heart rate (Figure 4.9) Dyadic regulation can also make use of distraction, such as rocking, feeding, bathing, or singing to an infant (Atkinson et al., 2021).

Dyadic regulation and emotion regulation are also supported by **synchrony**, or when caregivers and children are responding to each other's emotions in reciprocal and sensitive ways (Feldman. 2007; Kerr et al., 2021). For example, when a father and infant smile or giggle while making eye contact, they are demonstrating good synchrony. When caregivers demonstrate sensitivity and responsiveness to their infant's emotions, it can lower infant negative emotions and improve infant regulation (Abney et al., 2021; Gartstein et al., 2018). Understanding regulation strategies, the role of culture in emotion regulation, and emotional awareness will help you in your encounters, both personal and professional, with young children.

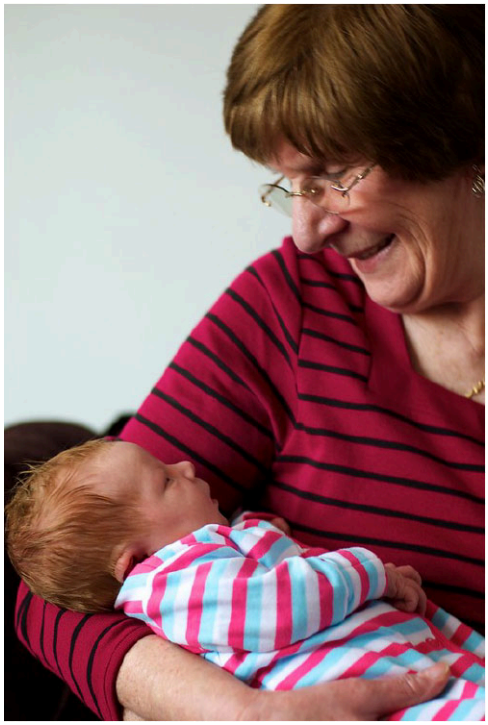


FIGURE 4.9 Infants are often dependent on their caregivers to help regulate their emotions through touch and cuddling. (credit: "Esme" by Sylvia/Flickr, CC BY 2.0)

Regulation Strategies

A newborn who is overwhelmed and overstimulated may develop the regulation strategy of **attentional distraction**, such as by turning their head away and closing their eyes (Atkinson et al., 2021). As infants grow and can move and crawl, they can begin to use attentional distraction to move away from upsetting situations such as loud appliances in the home and toward calming situations, such as interesting toys.

When infants and toddlers are distressed and upset, **self-soothing** skills such as sucking that directly target the level of arousal can help regulate their heart rate and breathing (Atkinson et al., 2021). Many infants learn to use sucking as their first self-soothing technique, whether sucking on a bottle, a pacifier, a toy, or their thumb. Another self-soothing technique is touching and rubbing blankets, soft toys, or hair to calm down.

By the second year of life, young toddlers also engage in **attention-seeking behaviors** to help regulate themselves. These behaviors include crying and calling out for a caregiver, reaching and turning toward an adult, and wanting to be held or cuddled (Atkinson et al., 2021). Finally, near twenty-four months of age, **escape behavior** begins to emerge, in which toddlers attempt to hide, protest, avoid, and rebuke activities or experiences that bring them distress. An overtired or upset toddler may hide their face and curl on the floor, run to a corner, or throw items away to exit the activity they find upsetting. By being aware of an infant's age, resources, and tools for emotion regulation, caregivers can begin helping them develop self-regulation skills over the first few years of life.

Supporting young infants and toddlers with emotion regulation skills has long-term benefits. Parents and caregivers who more often hold and cuddle their infants and respond to them with close soothing tend to more effectively promote infant development and soothability (Kiel et al., 2024). Moreover, caregivers who are sensitive to infants' and toddlers' nonverbal cues such as attentional distraction, attention-seeking, and escape behaviors can anticipate their emotional needs and prevent emotions from escalating into distress (Abney et al., 2021; Thomas et al., 2017). Finally, parents and caregivers who provide a supportive routine with adequate sleep and quiet time, regular feeding, and opportunities to move and wiggle can help toddlers to be well-rested and fed, which can help with the development of independent self-soothing behaviors (Kim et al., 2014).

Culture and Emotion Regulation

Emotion regulation skills may be culturally dependent. In a large-scale study, Harkness and colleagues (2007) found that U.S. families supported emotion regulation by supplying interesting and stimulating environments, whereas Dutch families focused on providing structure and routine. Italian families emphasized touch and tactile comfort, whereas Korean families prioritized physical well-being and routine (Harkness et al., 2007). Finally, Japanese American and European American infant-mother dyads showed similar person-oriented interaction and socialization behaviors, whereas Japanese infant-mother dyads showed more object-oriented interactions (Bornstein et al., 2012). Person-oriented interactions involve things like turn taking and face-to-face interactions, while object-oriented interactions involve the caregiver and infant interacting by both focusing on objects such as a toy. A variety of strategies across cultures can promote emotion learning and regulation (Friedlmeier et al., 2015).

Emotional Awareness

Along with emotion regulation, young infants and toddlers are beginning to develop a sense of **emotional awareness**, insight into their own emotional state and those of others (Figure 4.10). The process of recognizing and identifying our current affective state is called **emotional labeling** (Elsayed et al., 2021). Caregivers who assist toddlers with this skill help provide them with an important self-care tool to articulate and understand themselves (Nencheva et al., 2023). For example, a caregiver using emotional labeling might help a crying toddler identify their feelings and experiences by saying, "I know. You're sad because big brother left to go to school, but he'll be back." Finally, recognizing emotions in others can help toddlers develop secondary emotions such as empathy and compassion (Spinrad & Gal, 2018).

FIGURE 4.10 Caregivers can help toddlers to label and understand their emotions. (credit: modification of work "US Navy 100812-N-8539M-139 Operations Specialist 3rd Class Angel Ramirez practices high-fives with a child at a Da Nang primary school" by Lt. Mike Moreley, U.S. Navy/Wikimedia Commons, Public Domain)

Taken together, emotion regulation and emotional awareness are the building blocks for emotional intelligence, the ability to understand emotions and motivations in yourself and others (Mayer et al., 2011). Although many emotional milestones are accomplished in the first two years of life, there are many emotional tasks beyond a toddler's ability. For instance, delay of gratification, or regulating happy and excited emotions to stay calm, will not start to develop until age four years. Knowing an infant's or toddler's developmental abilities and limits can aid caregivers and those who work with children, such as teachers and pediatric nurses or doctors, in promoting emotion development and regulation.

References

Abney, D. H., DaSilva, E. B., & Bertenthal, B. I. (2021). Associations between infant-mother physiological synchrony and 4- and 6-month-old infants' emotion regulation. *Developmental Psychobiology, 63*(6), e22161. https://doi.org/10.1002/dev.22161

Atkinson, N. H., Jean, A. D. L., & Stack, D. M. (2021). Emotion regulation from infancy to toddlerhood: Individual and group trajectories of full-term and very-low-birthweight preterm infants. *Infancy, 26*(4), 570–595. https://doi.org/10.1111/infa.12405

Bornstein, M. H., Cote, L. R., Haynes, O. M., Suwalsky, J. T., & Bakeman, R. (2012). Modalities of infant-mother interaction in Japanese, Japanese American immigrant, and European American dyads. *Child Development, 83*(6), 2073–2088. https://doi.org/10.1111/j.1467-8624.2012.01822.x

Brazelton, T. B. (1973). *Neonatal Behavioral Assessment Scale.* Spastics International Medical Publications. https://nidcap.org/wp-content/uploads/2013/12/Brazelton-1973-BNBAS.pdf

Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion, 6*(3–4), 169–200. https://doi.org/10.1080/02699939208411068

Ekman, P. (1999). Basic emotions. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion,* (pp. 45–60). John Wiley & Sons. https://doi.org/10.1002/0470013494.ch3

Elsayed, N. M., Vogel, A. C., Luby, J. L., & Barch, D. M. (2021). Labeling emotional stimuli in early childhood predicts neural and behavioral indicators of emotion regulation in late adolescence. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 6*(1), 89–98. https://doi.org/10.1016/j.bpsc.2020.08.018

Feldman, R. (2007). On the origins of background emotions: from affect synchrony to symbolic expression. *Emotion, 7*(3), 601–611. https://doi.org/10.1037/1528-3542.7.3.601

Friedlmeier, W., Çorapçi, F., & Benga, O. (2015). Early emotional development in cultural perspective. In L. A. Jensen (Ed.), *The Oxford handbook of human development and culture: An interdisciplinary perspective* (pp. 127–148). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199948550.013.9

Gartstein, M. A., Hancock, G. R., & Iverson, S. L. (2018). Positive affectivity and fear trajectories in infancy: Contributions of mother-child interaction factors. Child Development, 89(5), 1519–1534. https://doi.org/10.1111/cdev.12843

Harkness, S., Super, C. M., Moscardino, U., Rha, J.-H., Blom, M. J. M., Huitrón, B., Johnston, C., Sutherland, M., Hyun, O.-K., Axia, G., & Palacios, J. (2007). Cultural models and developmental agendas: Implications for arousal and self-regulation in early infancy. *Journal of Developmental Processes, 1*(2), 5–39. https://www.researchgate.net/publication/237705701_Cultural_Models_and_Developmental_Agendas_Implications_for_Arousal_and_Self-regulation_in_Early_Infancy

Hay, D. F. (2019). *Emotional Development from Infancy to Adolescence: Pathways to Emotional Competence and Emotional Problems.* Routledge/Taylor & Francis Group. https://doi.org/10.4324/9781315849454

Izard, C. E. (1977). Differential emotions theory. In Human emotions (pp. 43–66). Springer. https://doi.org/10.1007/978-1-4899-2209-0_3

Izard, C. E. (1991). *The psychology of emotions.* Plenum Press. https://doi.org/10.1007/978-1-4899-0615-1

Kerr, M. L., Rasmussen, H. F., Smiley, P. A., Buttitta, K. V., & Borelli, J. L. (2021). The development of toddlers' emotion regulation within the family system: associations with observed parent-child synchrony and interparental relationship satisfaction. *Early Childhood Research Quarterly, 57*(4), 215–227. https://doi.org/10.1007/978-1-4899-2209-0_3

Kiel, N., Samdan, G., Wienke, A. S., Reinelt, T., Pauen, S., Mathes, B., & Herzmann, C. (2024). From co-regulation to self-regulation: Maternal soothing strategies and self-efficacy in relation to maternal reports of infant regulation at 3 and 7 months. *Infant Mental Health Journal, 45*(2), 135–152. https://doi.org/10.1002/imhj.22098

Kim, B.-R., Stifter, C. A., Philbrook, L. E., & Teti, D. M. (2014). Infant emotion regulation: Relations to bedtime emotion availability, attachment security, and temperament. *Infant Behavioral Development, 37*(4), 480–490. https://doi.org/10.1016/j.infbeh.2014.06.006

Lewis, M., & Sullivan, M. W. (2005). The development of self-conscious emotions. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation*, 185–201. https://psycnet.apa.org/record/2005-08058-011

Lewis, M., Sullivan, M. W., Stanger, C. & Weiss, M. (1989). Self development and self-conscious emotions. *Child Development, 60*(1), 146–156. https://doi.org/10.2307/1131080

Mauss, I. B., Levenson, R. W., McCarter, L., Wilhelm, F. H., & Gross, J. J. (2005). The tie that binds? Coherence among emotion experience, behavior, and physiology. *Emotion, 5*(2), 175–190. https://doi.org/10.1037/1528-3542.5.2.175
Mayer, J. D., Salovey, P., Caruso, D. R., & Cherkasskiy, L. (2011). Emotional intelligence. In R. J. Sternberg & S. B. Kaufman (Eds.), *The Cambridge handbook of intelligence* (pp. 528–549). Cambridge University Press. https://doi.org/10.1017/CBO9780511977244.027
Nencheva, M. L., Tamir, D. I., & Lew-Williams, C. (2023). Caregiver speech predicts the emergence of children's emotion vocabulary. *Child Development, 94*(3), 585–602. https://doi.org/10.1111/cdev.13897
Park, P. S., & Lewis, M. (2021). On the measurement of self-conscious emotions. *Child Psychiatry & Human Development, 52*, 1164–1172. https://doi.org/10.1007/s10578-020-01094-2
Spinrad, T. L., & Gal, D. E. (2018). Fostering prosocial behavior and empathy in young children. *Current Opinion in Psychology, 20*, 40–44. https://doi.org/10.1016/j.copsyc.2017.08.004
Thomas, J. C., Letourneau, N., Campbell, T. S., Tomfohr-Madsen, L., & Giesbrecht, G. F. (2017). Developmental origins of infant emotion regulation: Mediation by temperamental negativity and moderation by maternal sensitivity. *Developmental Psychology, 53*(4), 611–628. http://dx.doi.org/10.1037/dev0000279
Tracy, J. L., & Randles, D. (2011). Four models of basic emotions: A review of Ekman and Cordaro, Izard, Levenson, and Panksepp and Watt. *Emotional Review, 3*(4), 397–405. https://doi.org/10.1177/1754073911410747
Trevarthen, C. (2005). Action and emotion in development of cultural intelligence: why infants have feelings like ours. In J. Nadel & D. Muir (Eds.), *Emotional development: Recent research advances* (pp. 61–91). Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780198528845.003.0003
Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98*(2), 219–235. https://doi.org/10.1037/0033-2909.98.2.219
Yik, M. S. M., Russell, J. A., & Barrett, L. F. (1999). Structure of self-reported current affect: Integration and beyond. *Journal of Personality and Social Psychology, 77*, 600–619. https://doi.org/10.1037/0022-3514.77.3.600

4.4 Social Development in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify milestones in social development in infancy and toddlerhood
- Describe the major elements of attachment theory
- Describe the development of the major attachment styles
- Explain environmental and cultural variation in attachment

Patrice is exhausted. Whenever she attempts to leave her fifteen-month-old son Marco in his playpen so she can do some housework, he erupts in wails. It breaks her heart to make her toddler so upset, but she knows he is safe, and the chores need to be done. Yet even when he is content and playing happily, the sight of his mother leaving the room causes Marco to panic.

It wasn't always this way. Patrice remembers that when Marco was younger, she could take him to her parents' house, and he would remain calm when she left him in the care of his aunts and uncles. But now she feels trapped and overwhelmed. Just leaving Marco for a minute while she retrieves freshly washed clothes from the laundry or brings recycling downstairs causes him to scream and reach for her. If she lets him out of his playpen, Marco will follow Patrice closely, crawling and scooting to stay as close to her as possible.

Patrice worries about what will happen when Marco starts to attend a childcare center in a few months. She expects that he will be upset every day when she leaves him there. She's not sure what to do to alleviate the distress he experiences, and she feels immense guilt for needing to leave her son.

Although Patrice's experience with Marco upsets her, it is typical and may be a sign of a healthy infant and a secure infant-caregiver attachment. In the early years of life, much infant and toddler behavior has strong biological components, as you've learned. Infants also require social interaction to grow and thrive. From the earliest age, they benefit from being held, spoken to, and loved. Without consistent social feedback from parents and caregivers, infants would struggle to understand and navigate the world around themselves (Astor et al., 2022; Bourne et al., 2022). In this section, you'll explore how the social world of infants supports their emotional development and growth, the role of early social bonds, and some cultural variations in social and emotional development.

Imitation, Joint Attention, and Social Referencing

Shortly after birth, infants begin to look toward and attend to the voices of their primary caregivers. Typically, the voice of their biological mother is most familiar to them because they heard it in utero, and it provides comfort and reassurance (DeCasper & Fifer, 1980). As infants look toward voices, they begin to understand faces, and at approximately two months of age will produce their first **social smile**—an involuntary smile they make in response to seeing another smiling face (Wormann et al., 2012). Social smiles may not represent an infant's actual mood or emotion, but they allow them to bond with their caregivers by mirroring their expression (Figure 4.11). What starts as natural imitation of and attention to a caregiver becomes purposeful imitation of others, and that observing a trusted caregiver's response becomes a way for the infant to learn

how to interpret new experiences.

FIGURE 4.11 Infants start to display social smiles at approximately eight weeks of age in response to caregivers' smiles. (credit: modification of work "the laughing buddha" by Andre Deak/Flickr, Public Domain)

Between two and four months of age, infants develop an important bonding mechanism called **involuntary imitation**, in which they immediately and reflexively imitate their caregiver. Andrew Meltzoff examined the range of ways newborns imitate adult facial expressions (Meltzoff & Moore, 1983, 1994). Infants have no voluntary control over this form of imitation. Instead, their brains' **mirror neurons**, neurons that react when we observe another individual and then perform the same action ourselves, allow them to replicate a variety of facial expressions such as smiles, smirks, and tongue protrusions (Marshall & Meltzoff, 2014). Through this mirroring of a caregiver, involuntary imitation strengthens emotional bonds.

By eight to twelve months of age, infants can display **voluntary imitation**, in which they purposefully imitate the gestures and facial expression of another person. Voluntary imitation is conscious and controllable, but at this age it is limited to only immediate imitation. A one-year-old infant is unable to imitate something they saw hours or days in the past (Meltzoff, 1988; Paulus et al., 2011).

As you learned in 3.5 Language in Infants and Toddlers, around two to three months of age, infants begin more social interactions through eye contact, smiles, and exchanging coos and other sounds. By six months, the infant may be interested in and attending to a display of peek-a-boo, vocalizing during play, and interacting more with toys. A nine-month-old demonstrates more coordination and social skills during peek-a-boo and moves around more to explore. When infants focus their attention on the same object, person, or experience, as a social partner, it is known as **joint attention**. Joint attention can involve visual attention, such as both infant and caregiver looking at the same object, and attention from other senses such as touch or hearing (Gabouer & Bortfeld, 2021).

Interactive play and synchrony involve joint attention and can facilitate cognitive, linguistic, and social development and improve early assessment of a toddler's unique needs. For example, using joint attention and labeling helps improve infant vocabulary. In a recent study, researchers used dual head-mounted eye tracking to record where parents and infants look during toy play (Yu et al., 2019). They found that joint attention (when both look at the same thing) and sustained attention (how long infants focus on something) patterns predict vocabulary size at twelve and fifteen months. Sustained attention during joint attention was the strongest predictor of vocabulary growth (Yu et al., 2019). Research also shows that toddlers with autism spectrum disorder often have poorer joint attention and expressive language, indicating that early assessment of joint attention may provide caregivers early opportunities for offering scaffolded support to toddlers with autism (Adamson et al., 2019).

Along with voluntary imitation, one-year-old infants also display **social referencing**. This is the tendency to look to others during novel situations to understand how to feel and respond (Mireault et al., 2014). For

example, in unusual or ambiguous situations, infants tend to look to the facial expression of their caregiver to interpret and respond to the experience. If a caregiver looks calm or happy, infants are more likely to interpret a novel situation as safe and exciting. If a caregiver looks nervous, upset, fearful, or angry, infants are more likely to become nervous, timid, or avoidant. This means a caregiver who is cautious with their responses can help an infant navigate tricky situations better. For example, on a trip to the pediatrician, a caregiver can maintain a positive expression and calm mood so the infant is less likely to feel anxious. And when a toddler has a small tumble and looks to their caregiver before deciding to cry, if the caregiver smiles and claps with praise for them for getting back up, they may just keep on playing. However, if they see you frowning or looking fearful, tears might erupt.

LINK TO LEARNING

In the still-face paradigm research, we can observe how much an infant thrives from positive emotional expressions and interactions with a primary caregiver. View this video of a still-face experiment (https://openstax.org/r/104StillFaceExp) to view it in action.

Social referencing can be especially helpful during times of joint attention, when an infant follows a caregiver's body language or voice to attend to an intended stimulus (Figure 4.12). For example, when a caregiver points to a toy or an animal, an infant can understand and follow their caregiver's gaze and gesture and attend to the same stimulus. Joint attention requires the ability to understand the perspective of another person, which is the basis of **social cognition**, or the ability to understand how or what others are thinking or feeling (Mundy & Newell, 2007).

FIGURE 4.12 Joint attention is the ability of infants and toddlers to follow a caregiver's gestures or voice to attend to a shared stimulus, such as a book. (credit: modification of work "Dad" by "NappyStock"/nappy, Public Domain)

Over the first year of life, infants develop voluntary imitation, social referencing, and joint attention skills through consistent interactions with their caregivers. The role of the caregiver is essential to healthy social development of infants and toddlers, particularly when it comes to infant attachment.

Attachment Theory

Although infants may receive care from multiple family members, the **primary caregiver** is the individual who spends the most time with the infant in the first year of life and becomes a central focus for the infant. The emotional and affective bond between an infant and their primary caregiver, known as **attachment**, is one of the most enduring and transformative affective relationships in our lives. Often the primary caregiver is the mother, but it may also be the father, grandmother, or another caregiver. Attachment can occur with any caregiver who provides stable and consistent care in any type of family, including adoptive parents (McConnachie et al., 2020). Over time, attachments can expand to include multiple family members (Matthews & Rosner, 1988).

Early Work on Attachment

Sigmund Freud wrote about infant-caregiver attachment as relying on oral stimulation through sucking and feeding. Because the primary caregiver is often responsible for feeding the infant, Freud believed this oral stimulation facilitated the strong bond between parent and child. Sigmund's daughter Anna Freud expanded on this idea, theorizing that infants and caregivers bond through their biological unity and closeness. Erik Erikson also saw the development of trust over the first year of life as an essential psychosocial milestone.

Harry and Margaret Harlow were some of the first researchers to test theories on attachment, bonding, and the biological underpinnings of attachment (Harlow et al., 1965). Working with baby rhesus monkeys, Harlow constructed surrogate mothers made of wire frames covered in soft cloth and able to provide milk. Young monkeys "raised" by the surrogates had their physical health needs met but differed in their access to physical comfort. In one experiment, infant monkeys were given a choice of two surrogate mothers, one of wire with milk but no cloth, and another with cloth but no milk. The babies chose to spend nearly twenty-three hours a day cuddling the cloth mother and ventured to the wire mother only for food (Figure 4.13) (Harlow & Zimmerman, 1959). Contrary to Sigmund Freud's ideas, these findings suggest that tactile comfort or the provision of cuddling and physical ease for emotional reassurance is a stronger component of primate attachment than oral stimulation and feeding (Radetzki, 2018).

In other experiments, the young monkeys were exposed to fear-inducing events, such as a strange room or a loud, moving toy. Infant monkeys in these experiments showed completely different responses based on the presence of a wire surrogate mother or a cloth surrogate mother. Those provided the cloth surrogate would seek physical contact with the mother before relaxing and exploring the room or the toy. In contrast, infant monkeys provided with only a wire surrogate mother showed strange behaviors, including rocking back and forth or clutching themselves, and did not explore (Harlow & Zimmerman, 1959; Harlow et al., 1965). The Harlows concluded that these differences showed just how important physical contact is to a healthy infant-mother bond and an infant's sense of security.

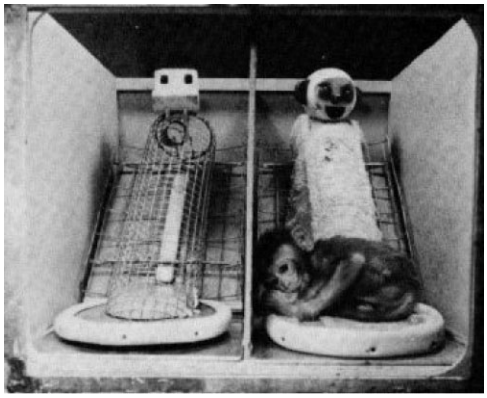


FIGURE 4.13 The Harlows provided infant rhesus monkeys a choice between surrogate mothers that provided either food or comfort. (credit: "Natural of Love Wire and cloth mother surrogates" by Harry Harlow/Wikimedia Commons, CC0 1.0)

In addition to a biological component, infant-caregiver attachment also has a cognitive component. In another theory of infant attachment known as **object-relations theory**, described by Karen Horney, infants learn how to interpret and understand the world first through their relationship with their primary caregiver (Horney, 1939). Initially, they discover they are separate from their caregiver. Then interactions with their caregiver help infants learn what to expect when interacting with their environment.

John Bowlby's theory united the biological and cognitive components of attachment (Bowlby, 1951). Writing about the caregiver's perspective, Bowlby proposed that parents may be motivated to provide care and comfort to an infant because of the infant's rounded features (van der Horst & Kagan, 2011). An Austrian zoologist, Konrad Lorenz, named this attraction the **kewpie doll effect** after the toys known as kewpie dolls (Figure 4.14) (Dydynski, 2020; Lorenz, 1981). Like human infants, infants of most mammalian species have shorter limbs, proportionally larger eyes, and more rounded facial features than adults of the same species. Their appearance may influence the way mammalian brains respond to their young, motivating parents to provide reliable care and attention.

(a) (b) (c)

FIGURE 4.14 (a) Kewpie dolls, popular in the early twentieth century, had exaggerated infantile features such as rounded bodies, short limbs, and large eyes. (b) Newborn infants and (c) puppies and other baby mammals show many of these same features. (credit a: modification of work "Kewpie Dolls 2" by Michael/Flickr, CC BY 2.0; credit b: "Newborn infant" by Shannon Lowey/Flickr, CC BY 4.0; credit c: modification of work "Puppy filtered" by unknown/Wikimedia Commons, CC0 1.0)

Attachment Stages

In addition to unifying the biological and cognitive aspects of attachment, Bowlby also theorized four stages of human infant attachment (Bowlby, 1951):

- Pre-attachment (birth to 2 months)
- Attachment in the making (2 to 7 months)
- Clear-cut attachment (7 to 24 months)
- Reciprocal relationship formation (24 months on)

In the first stage, pre-attachment, infants between birth and two months of age are considered to experience indiscriminate social responsiveness, a stage in which they have no preference about who provides care as long as their needs are met. They also learn they can influence their social environment through cries and smiles.

Infants' ability to affect their environment grows through discriminating sociability in the second stage, attachment in the making, which lasts from two to seven months. Now infants are more aware of their influence on others, and of social reciprocity, or turn taking, especially while making vocalizations and smiles. They begin to understand trust, demonstrating Erikson's first stage of psychosocial development. The time of discriminating sociability also marks the beginning of a preference for familiar caregivers. Infants begin to grow wary of unfamiliar people (Lin & Green, 2009). By ages four to six months, there may be signs of **stranger anxiety**, a fear reaction to people the infant does not often see, such as a grandparent who visits infrequently,

as well as actual strangers (Bohlin & Hagekull, 1993; Brand et al., 2020). Stranger anxiety occurs even when familiar family members are near, and it shows that infants are starting to distinguish between the adults in their life.

Bowlby's third stage, clear-cut attachment, occurs when infants are seven to twenty-four months old and experiencing the specific, enduring affective bonds for which this stage is named. That is, they have identified a primary caregiver. Bowlby believed this began with a single caregiver—the caregiver who spent the most time with them and responding to their needs. Later researchers upheld that attachment to multiple caregivers is possible. Cognitively, infants begin to understand that the world is a safe place as long as this person is near. They begin to show a strong preference for this adult, and as their locomotion skills develop, they will attempt to follow and stay close to this caregiver and may cry to protest their absence. These cries are a sign of **separation anxiety**, distress resulting from the removal of the primary caregiver. Separation anxiety tends to peak between fourteen and eighteen months of age and can be upsetting for both the infant and the caregiver (Kagan et al., 1978; Lamb, 1978).

The final stage in Bowlby's attachment theory is the formation of reciprocal relationships, which begins to develop around age twenty-four months. Toddlers begin to understand that relationships still exist even when the people in them are not present. The absence of their primary caregiver becomes tolerable, and protest cries may decrease. Moreover, toddlers are forming an **internal working model**, a cognitive understanding of the way relationships work and their expectations, including whether to trust and rely on someone who is not constantly present.

Subtypes of Attachment

Mary Ainsworth, who studied under Bowlby, was interested in researching infant responses to separation from primary caregivers (Ainsworth et al., 1979). She devised a test known as the **Strange Situation** (Ainsworth et al., 1979; Van Rosmalen et al., 2015), in which an infant approximately twelve to eighteen months of age and their primary caregiver enter a welcoming laboratory setting, with seating and toys. Next, a research assistant known to be a stranger to the infant enters the room and initiates a series of events each lasting just a few minutes as described in Table 4.3.

Step	Action	Observation
1	Caregiver and infant are left alone in testing room.	Infant's response to novel room, interest in toys, social referencing, and eye contact with caregiver
2	Stranger (research assistant) enters the testing room.	Infant's response to novel person, social referencing, and eye contact with caregiver
3	First separation; caregiver exits testing room.	Infant's response to absence of caregiver; infant's soothability and reaction to stranger's attempts to comfort
4	First reunion; caregiver reenters testing room. Stranger quietly exits testing room.	Infant's response to return of caregiver
5	Second separation; once infant is calm, caregiver leaves testing room again.	Infant's response to absence of caregiver
6	Stranger reenters testing room.	Infant's reaction to stranger's attempts to comfort
7	Second reunion; caregiver reenters the testing room.	Infant's reaction to return of caregiver

TABLE 4.3 Strange Situation Procedure (source: Ainsworth et al., 1979)

Over the course of the experiment, infants and caregivers are separated and reunited twice. During the first separation, a stranger is present to help provide comfort. During the second separation, the infant is momentarily left alone while being observed through a one-way mirror or through a video camera. During this second separation, the stranger returns first and attempts to comfort the infant before the caregiver returns the final time.

When Ainsworth first conducted the Strange Situation in the United States, she found that nearly 65 percent of infants engaged in social referencing behaviors, glancing back at caregivers during the first few steps of the test (Ainsworth et al., 1979). Then they became upset and cried during the separations but were calm, happy, and excited to see their primary caregiver again during each reunion. Ainsworth believed these infants felt safe and secure if their caregiver was present, and she named their pattern of behavior **secure attachment**. Secure attachment involved the idea that the caregiver acted as a **secure base** for the infant; in other words, the caregiver gave the infant a safe place from which to explore the world around them (Fraley &. Spieker, 2003). Sensitive and responsive caregiving and synchrony are likely to promote secure attachment.

Meanwhile, approximately 20 percent of infants appeared more independent and indifferent to the absence of their caregivers. They made less eye contact and engaged in less social referencing. When the caregiver exited the room, these infants were less likely to become upset and less likely to be responsive to the caregiver's return. Ainsworth believed these infants had learned to be less reliant on their caregivers. She called this pattern of behaviors **insecure avoidant attachment**.

A third group of infants, about 10 percent of participants, tended to cling closely to caregivers in the early steps of the test, and some were too nervous to play with toys in the testing room. They became extremely distressed during separations but were also agitated and upset during reunions. In some situations, they seemed angry when caregivers returned. This behavioral pattern was called **insecure ambivalent attachment** but is also sometimes referred to as anxious or resistant. Infants who display this pattern are thought to be so dependent on their caregiver, and so distressed by separation, that reunions are also emotionally distressing events.

Finally, about 5 percent of infants did not follow any of these patterns. Displaying what is called **disorganized attachment**, they sometimes appeared confused or showed mixed emotions that could not be classified. This response may indicate they were unsure what to expect from their caregivers due to inconsistent care or mental illness. In some cases, it may also indicate abuse or neglect in the household (Granqvist et al., 2017).

The four behavioral patterns—secure, avoidant, ambivalent, and disorganized—have been connected to a variety of developmental outcomes. Infants who display secure attachment at twelve months of age are more likely to demonstrate positive social skills as toddlers and young children, to engage in more pretend play, and to understand trust in relationships (Ding et al., 2014; Grossman et al., 1985). Attachment patterns may also differ somewhat for neurodivergent children including children with autism; however, a large percentage of neurodivergent children develop secure attachment (Potter-Dickey et al., 2020). For infants in the United States, avoidant attachment has been linked with less close infant-caregiver relationships, and ambivalent attachment has been linked with anxious behavior and wariness (Granqvist et al., 2017; Groh et al., 2012). However, these findings must be interpreted in the context of cultural norms and values.

LINK TO LEARNING

Review this video that demonstrates the Strange Situation devised by Mary Ainsworth (https://openstax.org/r/104StrangeSitun) to learn more.

Cultural Variations in Social Development and Attachment Security

Early researchers once thought that attachment was formed universally across cultures and was influenced by evolutionary adaptive traits in our species. However, cultural and ecological processes also influence infant attachment. For instance, self-exploration during the first year of life is less common in many non-Western cultures, where infants are held or carried for a greater proportion of time and where there is more focus on fostering relatedness over autonomy (Keller 2012; Keller & Otto, 2009).[2] Infants may also be prohibited from exploration away from their caregiver. Both Indonesian and Nigerian mothers tend to give disapproval and fearful looks when children attempt to venture too far away, and Japanese mothers may prevent independent self-exploration by following and initiating touch with their infant (Morelli, 2015).

Reactions to separation from the primary caregiver may also differ due to cultural processes. Although the development of separation anxiety follows a similar trajectory across cultures, it disappears earlier in communal environments in which infants are tended to by a variety of caregivers, such as in Israeli kibbutzim or Mayan intergenerational homes (Friedlmeier et al., 2011).

These cultural differences in exploration and separation anxiety affect the outcome of the Strange Situation across cultures. For instance, German infants are more likely to be categorized as having insecure avoidant attachment compared to U.S. infants (Grossman et al., 1985). The reason may be that German children are encouraged to explore at an earlier age, and their behavioral attachment pattern at twelve months is not linked with developmental maladjustment later. Different attachment patterns on the Strange Situation do not always indicate caregiver-child attachment issues, instead culture may simply shape differences in parent-child relationship styles.

Japanese infants tend to display a higher level of distress and be categorized as having an ambivalent attachment at twelve months of age than U.S. infants (Rothbaum et al., 2000), possibly due to the close physical contact maintained between infant and primary caregiver during the first year of life. This high level of distress does not predict wariness in Japanese children at later ages, however, because self-exploration is encouraged at later ages. In other words, Japanese parent-child relationships may follow a slightly different trajectory beginning with a focus on teaching relatedness before autonomy.

INTERSECTIONS AND CONTEXTS

Co-sleeping and Attachment

In many cultures around the world, bed-sharing or co-sleeping—sharing a bed or mattress with infants—is commonplace (Chung & An, 2014.) In Africa, Asia, and Latin America, co-sleeping is seen as a beneficial way to bond with an infant; keep them safe, comfortable, and happy; and ensure the whole family gets a good night's sleep (Mileva-Seitz et al., 2017). In European cultures, co-sleeping has been less common over the past few centuries, and infants are more likely to be placed in separate bassinets or cribs.

In recent decades, some Western families have been pivoting away from a separate crib and toward co-sleeping. Some parents choose to co-sleep to support breastfeeding, to promote attachment, or to support sleep for both infant and caregiver (Kruse et al., 2024).[3] Co-sleeping, when practiced safely, may help promote well-being and bonding for infants and caregivers. For example, some research has found that co-sleeping supports mother-infant synchrony, attachment, and co-regulation (Barry, 2022). Research also suggests that co-sleeping is heavily influenced by family and cultural values and norms and may be important for caregivers who value proximity and physical touch (Barry, 2019).

While co-sleeping may support breastfeeding, it is also potentially beneficial to a caregiver's goals to promote bonding and attachment. Research on sleeping arrangements in families has also found that fathers who co-

2 This research (Keller 2012; Keller & Otto, 2009) uses the terms "Western" and "non-Western."
3 This study (Kruse et al., 2024) uses the terms "Western countries" and "Eastern countries."

sleep report stronger bonds with their infants than fathers who do not co-sleep, though they also report higher parenting stress (Gettler et al., 2021). The choice to co-sleep, by bed-sharing or room-sharing, or place infants in their own room is likely a complicated one for many parents based on cultural values, individual family values, and whether the culture encourages or discourages co-sleeping (Kruse et al., 2024). In addition, families may need to consider safe sleeping practices based on the family and public health guidelines (as discussed in 3.1 Physical Development in Infants and Toddlers).

Cultural processes may also affect **transgenerational attachment**—the attachment patterns passed down through generations of one family (LeVine, 2014). In Canada during the twentieth century, many Indigenous children were separated from their parents and forced to attend residential schools (Figure 4.15). There they often faced severe abuse and neglect, and many died from unsanitary conditions and lack of medical attention (Aguiar & Halseth, 2015). Many who survived and grew up to become parents struggled to form secure attachments with their own children, highlighting the way emotional trauma from one generation can impact those in the future. Understanding the emotional needs and assets of current generations of Indigenous children requires understanding their family and cultural history (Choate & Tortorelli, 2022).

FIGURE 4.15 In Canada, September 30 is the National Day for Truth and Reconciliation, dedicated to remembering Indigenous children who were abused and neglected and sometimes died in the last century's Canadian Indian Residential School system. (credit: "National Day for Truth and Reconciliation to remember Indigenous children" by Jane Whitney/Flickr, CC BY 4.0)

Not all survivors of intergenerational trauma pass this burden to future generations. Individual resilience in the face of adversity may allow for the formation of healthy and secure attachments, positive coping strategies, and overall well-being (Egeland et al., 1988). Such resilience has been seen especially among Holocaust survivors and their families (Shrira et al., 2011). Attachment theory opened our understanding of the important connections between experiences like caregiver-infant interactions and the infant's physical maturation and biological temperament for shaping emotion regulation and healthy development outcomes, including resilience (Sroufe, 2021).

References

Adamson, L. B., Bakeman, R., Suma, K., & Robins, D. L. (2019). An expanded view of joint attention: Skill, engagement, and language in typical development and autism. *Child Development, 90*(1), e1–e18. https://psycnet.apa.org/record/2017-45912-001

Aguiar, W., & Halseth, R. (2015). *Aboriginal peoples and historic trauma: The process of intergenerational transmission.* National Collaborating Centre for Aboriginal Health. https://www.ccnsa-nccah.ca/docs/context/RPT-HistoricTrauma-IntergenTransmission-Aguiar-Halseth-EN.pdf

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1979). *Patterns of Attachment: A psychological study of the strange situation.* Psychology Press. https://doi.org/10.4324/9781315802428

Astor, K., Lindskog, M., Juvrud, J., Wangchuk, Namgyel, S. C., Wangmo, T., Tshering, K., & Gredeback, G. (2022). Maternal postpartum depression impacts infants' joint attention differentially across cultures. *Developmental Psychology, 58*(12), 2230–2238. https://doi.org/10.1037/dev0001413

Barry, E. S. (2019). Co-sleeping as a proximal context for infant development: The importance of physical touch. *Infant Behavior and Development, 57*, 101385. https://doi.org/10.1016/j.infbeh.2019.101385

Barry, E. S. (2022). Using complexity science to understand the role of co-sleeping (bedsharing) in mother-infant co-regulatory processes. *Infant Behavior and*

Development, 67, 1–15. https://doi.org/10.1016/j.infbeh.2022.101723
Bohlin, G., & Hagekull, B. (1993). Stranger wariness and sociability in the early years. *Infant Behavior and Development*, *16*(1), 53–67. https://doi.org/10.1016/0163-6383(93)80028-7
Bourne, S. V., Korom, M., & Dozier, M. (2022). Consequences of inadequate caregiving for children's attachment, neurobiological development, and adaptive functioning. *Clinical Child and Family Psychology Review*, *25*(1), 166–181. https://doi.org/10.1007/s10567-022-00386-4
Bowlby, J. (1951). Maternal care and mental health. *Bulletin of the World Health Organization, 3,* 355–533. https://psycnet.apa.org/record/1951-06740-001
Brand, R. J., Escobar, K., & Patrick, A. M. (2020). Coincidence or cascade? The temporal relation between locomotor behaviors and the emergence of stranger anxiety. *Infant Behavior and Development*, *58*, 101423. https://doi.org/10.1016/j.infbeh.2020.101423
Choate, P., & Tortorelli, C. (2022). Attachment theory: A barrier for Indigenous children involved with child protection. *International Journal of Environmental Research and Public Health, 19*(14), 8754. https://doi.org/10.3390/ijerph19148754
Chung, S., & An, H. (2014). Cultural issues of co-sleeping in Korea. *Sleep Medicine Research*, *5*(2), 37–42. https://www.researchgate.net/publication/274703691_Cultural_Issues_of_Co-Sleeping_in_Korea http://dx.doi.org/10.17241/smr.2014.5.2.37
DeCasper, A. J., & Fifer, W. P. (1980). Of human bonding: Newborns prefer their mothers' voices. *Science, 208*(4448), 1174–1176. https://doi.org/10.1126/science.7375928
Ding, Y.-h., Xu, X., Wang, Z.-y., Li, H.-r., & Wang, W.-p. (2014). The relation of infant attachment to attachment and cognitive and behavioral outcomes in early childhood. *Early Human Development*, *90*(9), 459–464. https://doi.org/10.1016/j.earlhumdev.2014.06.004
Dydynski, J. M. (2020). Modeling cuteness: Moving towards a biosemiotic model for understanding the perception of cuteness and *Kindchenschema*. *Biosemiotics, 13*, 223–240. https://doi.org/10.1007/s12304-020-09386-9
Egeland, B., Jacobvitz, D., & Sroufe, L. A. (1988). Breaking the cycle of abuse. *Child Development*, *59*(4), 1080–1088. https://doi.org/10.1111/j.1467-8624.1988.tb03260.x
Fraley, R. C., & Spieker, S. J. (2003). Are infant attachment patterns continuous or categorically distributed? A taxometric analysis of Strange Situation behavior. *Developmental Psychology, 39*(3), 387–404. https://doi.org/10.1037/0012-1649.39.3.387
Friedlmeier W., Corapci, F., & Cole, P. M. (2011). Emotion socialization in cross-cultural perspective. *Social and Personality Psychology Compass*, *5*(7), 410–427. https://doi.org/10.1111/j.1751-9004.2011.00362.x
Gabouer, A., & Bortfeld, H. (2021). Revisiting how we operationalize joint attention. *Infant Behavior and Development*, *63*, 101566. https://doi.org/10.1016/j.infbeh.2021.101566
Gettler, L. T., Kuo, P. X., Sarma, M. S., Lefever, J. E. B., Cummings, E. M., McKenna, J. J., & Braungart-Rieker, J. M. (2021). US fathers' reports of bonding, infant temperament and psychosocial stress based on family sleep arrangements. *Evolution, Medicine, and Public Health, 9*(1), 460–469. https://doi.org/10.1093/emph/eoab038
Granqvist, P., Sroufe, L. A., Dozier, M., Hesse, E., Steele, M. van Ijzendoorn, M., Solomon, J., Schuengel, C., Fearon, P., Bakermans-Kranenburg, M., Steele, H., Cassidy, J., Carlson, E., Madigan, S., Jacobvitz, D., Foster, S., Behrens, K., Rifkin-Graboi, A., Gribneau, N., . . . Duschinsky, R. (2017). Disorganized attachment in infancy: A review of the phenomenon and its implications for clinicians and policy-makers. *Attachment & Human Development, 19*(6), 534–558. https://doi.org/10.1080/14616734.2017.1354040
Groh, A. M., Roisman, G. L., van Ijzendoorn, M. H., Bakermans-Kranenburg, M. J., & Fearon, R. P. (2012). The significance of insecure and disorganized attachment for children's internalizing symptoms: A meta-analytic study. *Child Development, 83*(2), 591–610. https://psycnet.apa.org/record/2012-07173-018
Grossman, K., Grossman, K. E., Gottfried, S., Gerhard S. & Unzer, L. (1985). A wide view of attachment and exploration: The influence of mothers and fathers on the development of psychological security from infancy to young adulthood. *Handbook of Attachment*. Guilford. https://psycnet.apa.org/record/2008-13837-037
Harlow, H. F., Dodsworth, R. O., & Harlow, M. K. (1965). Total social isolation in monkeys. *Proceedings of the National Academy of Sciences*, *54*(1), 90–97. https://doi.org/10.1073/pnas.54.1.90
Harlow, H. F., & Zimmermann, R. R. (1959). Affectional responses in the infant monkey. *Science, 130,* 421–432. https://psycnet.apa.org/doi/10.1126/science.130.3373.421 https://doi.org/10.1126/science.130.3373.421
Horney, K. (1939). The emphasis on childhood. *New Ways in Psychoanalysis* (pp. 113–153). W. W. Norton & Company. https://psycnet.apa.org/record/1939-03649-000
Kagan, J., Lapidus, D. R., & Moore, M. (1978). Infant antecedents of cognitive functioning: A longitudinal study. *Child Development*, *49*(4), 1005–1023. https://doi.org/10.2307/1128740
Keller, H. (2012). Autonomy and relatedness revisited: Cultural manifestations of universal human needs. *Child Development Perspectives*, *6*(1), 12–18. https://doi.org/10.1111/j.1750-8606.2011.00208.x
Keller, H. & Otto, H. (2009). The cultural socialization of emotional regulation during infancy. *Journal of Cross-Cultural Psychology, 40*(6), 996–1011. https://doi.org/10.1177/0022022109348576
Kruse, S. P., D'Souza, L., Tuncer, H. G. G., & Stewart, S. E. (2024). Sources of attitudes towards parent-child co-sleeping and their effects: A systematic scoping review. *Family Process*. https://doi.org/10.1111/famp.13022
Lamb, M. E. (1978). Qualitative aspects of mother-infant and father-infant attachments. *Infant Behavior & Development, 1*(1), 265–275. https://doi.org/10.1016/S0163-6383(78)80038-1
LeVine, R. (2014). Attachment theory as cultural ideology. In H. Otto & H.. Keller (Eds.), *Different Faces of Attachment: Variations of a Universal Human Need* (pp. 50–65). Cambridge University Press. https://doi.org/10.1017/CBO9781139226684.005
Lin, H.-C., & Green, J. A. (2009). Infants' expressive behaviors to mothers and unfamiliar partners during face-to-face interactions from 4 to 10 months. *Infant Behavior & Development, 32*(3), 275–285. http://dx.doi.org/10.1016/j.infbeh.2009.03.002
Lorenz, K. Z. (1981). *The foundations of ethology*. New York: Springer Science. https://doi.org/10.2307/1422147
Marshall, P. J., & Meltzoff, A. N. (2014). Neural mirroring mechanisms and imitation in human infants. *Philosophical transactions of the Royal Society of London, Series B, Biological sciences, 369*(1644), 20130620. https://doi.org/10.1098/rstb.2013.0620
Matthews, S. H., & Rosner, T. T. (1988). Shared filial responsibility: The family as the primary caregiver. *Journal of Marriage and the Family*, 185–195. https://doi.org/10.2307/352438
McConnachie, A. L., Ayed, N., Jadva, V., Lamb, M., Tasker, F., & Golombok, S. (2020). Father-child attachment in adoptive gay father families. *Attachment & Human Development, 22*(1), 110–123. https://doi.org/10.1080/14616734.2019.1589067
Meltzoff, A. N. (1988). Infant imitation after a 1-week delay: long-term memory for novel acts and multiple stimuli. *Developmental Psychology*, *24*(4), 470–476. https://doi.org/10.1037/0012-1649.24.4.470
Meltzoff, A. N., & Moore, K. M. (1983). Newborn infants imitate adult facial gestures. *Child Development, 54*(3), 702–709. https://doi.org/10.2307/1130058
Meltzoff, A. N., & Moore, K. M. (1994). Imitation, memory, and the representation of persons. *Infant Behavior and Development, 17*(1), 83–99. https://doi.org/10.1016/0163-6383(94)90024-8
Mileva-Seitz, V. R., Bakermans-Kranenburg, M. J., Battaini, C., & Luijk, M. P. C. M. (2017). Parent-child bed-sharing: The good, the bad, and the burden of evidence. *Sleep Medicine Reviews*, 32, 4–27. https://doi.org/10.1016/j.smrv.2016.03.003
Mireault, G. C., Crockenberg, S. C., Sparrow, J. E., Pettinato, C. A., Woodard, K. C., & Malzac, K. (2014). Social looking, social referencing and humor perception in 6- and 12-month-old infants. *Infant Behavior & Development, 37*(4), 536–545. https://doi.org/10.1016/j.infbeh.2014.06.004
Morelli, G. (2015). The evolution of attachment theory and cultures of human attachment in infancy and childhood. *The Oxford Handbook of Human Development and Culture* (pp. 149–164). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199948550.013.10
Mundy, P. & Newell, L. (2007). Attention, joint attention, and social cognition. *Current Directions in Psychological Science, 16*(5), 269–274. https://doi.org/10.1111/j.1467-8721.2007.00518.x
Paulus, M., Hunnius, S., Vissers, M., & Bekkering, H. (2011). Bridging the gap between the other and me: The functional role of motor resonance and action effects in infants' imitation. *Developmental Science, 14*(4), 901–910. https://doi.org/10.1111/j.1467-7687.2011.01040.x
Potter-Dickey, A., Letourneau, N., & de Koning, A.P.J. (2020). Associations between Neurodevelopmental Disorders and Attachment Patterns in Preschool-Aged Children: Systematic Review. *Current Developmental Disorders Reports,* 7, 277–289. https://doi.org/10.1007/s40474-020-00219-5
Radetzki, P. (2018). Harlow's famous monkey study: The historical and contemporary significance of the nature of love. *Canadian Journal of Family and Youth, 10*(1), 205–234. http://dx.doi.org/10.29173/cjfy29349
Rothbaum, F., Pott, M., Azuma, H., Miyake, K., & Weisz, J. (2000). The development of close relationships in Japan and the United States. Paths of symbolic harmony and generative tension. *Child Development, 71*(5), 1121–1142. https://doi.org/10.1111/1467-8624.00214
Shrira, A., Palgi, Y., Ben-Ezra, M., & Shmotkin, D. (2011). Transgenerational effects of trauma in midlife: Evidence for resilience and vulnerability in offspring of Holocaust survivors. *Psychological Trauma: Theory, Research, Practice, and Policy*, *3*(4), 394. https://doi.org/10.1037/a0020608
Sroufe, L. A. (2021). Then and now: The legacy and future of attachment research. *Attachment & Human Development*, *23*(4), 396–403. https://doi.org/10.1080/14616734.2021.1918450
Van der Horst, F. C. P. & Kagan, J. (2011). *John Bowlby: From Psychoanalysis to Ethology; Unraveling the Roots of Attachment Theory.* Wiley. https://doi.org/10.1002/9781119993100
Wormann, V., Holodynski, M., Kartner, J., & Keller, H. (2012). A cross-cultural comparison of the development of the social smile: A longitudinal study of maternal and infant imitation in 6- and 12-week-old infants. *Infant Behavior & Development, 35*(3), 335–347. https://doi.org/10.1016/j.infbeh.2012.03.002
Yu, C., Suanda, S. H., & Smith, L. B. (2019). Infant sustained attention but not joint attention to objects at 9 months predicts vocabulary at 12 and 15 months. *Developmental Science, 22*(1), e12735. https://doi.org/10.1111/desc.12735

4.5 Social Contexts and Influences in Infants and Toddlers

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the major contexts for social and emotional development in infancy and toddlerhood
- Describe cultural and familial variations in the major contexts for social and emotional development

Gerald is a retired grandfather and the legal guardian of eighteen-month-old twins Kara and Tamara. When he takes them to their toddler playgroup, he is the only grandpa there. Although the younger parents try to make him feel welcome, he feels his family is different. As a single man, he sometimes finds being the twins' caregiver exhausting, and he hopes to find camaraderie and support in the playgroup.

Recently, the other parents have started discussing childcare options, and it seems many of the twins' playmates will be heading to day care or getting home care. Gerald is unfamiliar with the world of formal childcare, since family members helped care for his own children when they were young. On his limited income, he cannot afford extra help, and he does not plan to enroll the twins in day care.

Each week at playgroup, Gerald notices other differences between his family and others. His own children grew up in an era of padded cribs and infant walkers, and new trends such as infant carriers and co-sleeping are odd to him. He is interested in the discussions of screen time and how this affects toddlers' emotional awareness, especially because his children grew up with fewer devices. Gerald is thinking a lot about contextual factors like care arrangements and exposure to media that influence infant and toddler development.

Family and Community as Context

The word "family" might bring to mind a specific type of family, perhaps one that mirrors your own family of origin, your chosen family, or the type of family you have or want to have one day. However, families can be very wide ranging and diverse, and both new and growing families also face new challenges when an infant enters the picture. In this section, you'll explore family structures, home environments, and the variety of contexts in which families interact.

Family Structure

A **family** is a group of at least two people who work together as a unit, share financial resources, and are related either by blood or by legal contract such as for adoption or marriage. Families come in many constellations and can include groups or pairs of related adults without children. Families with children can include parents who are single, married, a common-law or long-term couple, separated, divorced, or widowed. Family members can also include stepparents, adoptive parents, and foster parents, along with other caregivers such as grandparents, uncles, aunts, older cousins, and siblings.

One family type is the **nuclear family**, in which children live with two parental figures. A **single-parent family** consists of a child or children and only one parental figure. Another common type is the **blended family**, in which at least one parent has remarried, and stepparents and stepsiblings may be present (Ginther & Pollak, 2004). Sometimes children in blended families live part of the time in a second household with another parent, and this splitting of time between households yields a **commuter family**. Finally, an **intergenerational family** is a household that includes parents, uncles, aunts, and grandparents, all working together as one financial unit (Li & Huang, 2017).

Families can contain parents of any gender, sex, and sexual orientation. Gay, lesbian, and queer families can be nuclear, blended, intergenerational, or any other type. Families may be single parent or dual parent, with one or multiple caregivers serving as the primary caregiver. Research indicates that high-quality parent-child relationships and overall well-being are present in a variety of family constellations (Farr et al., 2020; Tornello & Patterson, 2018). In the United States, around 2.6 million LGBTQ+ adults are parents (Wilson & Bouton, 2024).[4] LGBTQ+ parents may also face unique stressors, particularly with discriminatory treatment or barriers to becoming parents, such as adoption policies and cultural attitudes (Patterson, 2024).

LGBTQ+ parents and heterosexual parents experience similar levels of parenting satisfaction, parenting quality, and child development outcomes (Patterson, 2022).[5] Heterosexual couples may also face unique stressors including uneven and inequitable workloads and childcare responsibilities, particularly in dual-earner homes. Though paternal involvement has increased over the last several decades, research indicates there is a lack of balance in home and childcare labor, with mothers often doing a larger share of both roles (DeGroot & Vik, 2020; Sayer, 2016). Working mothers in particular face risks related to role strain, feeling the stress of competing and overwhelming life demands, which can decrease self-care and emotional well-being over time (Dugan & Barnes-Farrell, 2020). This inequality may have increased during the era known as "pandemic parenting" (Calarco et al., 2021). However, when fathers and mothers balance the caregiving and household roles in two-parent heterosexual families, it predicts greater emotional well-being in children and in parents as well as improved parent-child relationship quality (Chung, 2021).

Some families may face unique risks, for example, when adopted children have experienced early adversity or lived in an institutionalized setting. Research shows that when adoptive parents provide warm, sensitive parenting, adoptive children are better able to improve in their attachment and have a lower risk in long-term behavior problems (Yarger et al., 2020; Paine et al., 2021; Yarger et al., 2019). Foster parents and facilities can use these same strategies to improve child developmental outcomes (Chodura et al., 2021; Wade et al., 2024). Children can thrive and experience healthy development in any of these (Figure 4.16). Overall, they benefit more from stability and consistent caregiving and support than from a particular type of family structure. Healthy family dynamics and caregiving begin with attachment, synchrony, and building trust in infancy and then grow into more defined parenting styles in early childhood.

4 This study (Wilson & Bouton, 2024) uses the term "LGBTQ."
5 This study (Patterson, 2022) uses the term "LGBTQ."

(a) (b) (c) (d)

FIGURE 4.16 (a), (b), (c), (d) Families come in many different constellations, with many combinations of caregivers and children. (credit a: modification of work “wocintech (microsoft) - 248” by WOCinTech Chat/Flickr, CC BY 2.0; credit b: “Sarah and Paul” by Sarah Evans/Flickr, CC BY 4.0; credit c: modification of work “Family at the beach” by “dimexphotography”/nappy, CC0 1.0; credit d: “Family picture” by The Kinsaul Family/Flickr, CC BY 4.0)

The component of family structure that most strongly influences infants’ and toddlers’ social and emotional development is the number of caregivers. Families with two caregivers, such as a mom and a dad, two moms, an uncle and a grandmother, or any other combination of two adults, tend to experience less stress than single-parent households (Biblarz & Gottainer, 2000).

Two types of stress that single parents experience are financial strain and time strain. Financial strain occurs when it becomes a challenge to afford shelter, food, education, and entertainment for children. Although any family can experience this stress, households with two adults typically have the potential to earn two incomes and enjoy more financial resources than one parental figure trying to balance childcare and work outside the home. Time strain occurs when a single parent lacks the hours to provide adequate attention, comfort, instruction, and love to their children. In a two-parent household, parents might be able to take turns devoting themselves to family time, whereas single parents are more likely to feel overworked (Van Gasse & Mortelmans, 2020). Time strain can occur in any type of family as well, and employed parents, whether single parents or dual earners, are more likely to experience it (Nomaguchi & Milkie, 2020).

Communities

Families exist within larger communities. Single-parent households in communal and family-focused neighborhoods may be able to rely on other households for support. Single-parent networks, or groups of single parents who rely on each other for babysitting, childcare, and errand running, can help to reduce each

other's financial and time strain. Single-parent and nuclear families who live close to extended family members may also rely on these family members to provide childcare and other types of support.

Developmental psychologists view the impact of families and wider communities on infant social development through Uri Bronfenbrenner's ecological systems model, introduced in 1.4 Contexts and Settings of Development (Bronfenbrenner, 1977). According to this model, children are nested within a microsystem, which consists of the people with whom they have direct, regular relationships, often their immediate and close family. Infants' interactions with parents, family members, and close neighbors make up their microsystem. Parents' interactions with each other and the relationships among other family members whom infants see regularly make up the next level, the mesosystem. For example, parents who communicate well and have a good relationship with each other are providing a positive mesosystem influence. The mesosystem can also include interactions between educators and parents, between caregivers and their employers, or between any broader systems.

Moving beyond people children interact with regularly, the ecological model's next level is the exosystem, the social and physical settings or contexts that affect the developing individual indirectly, such as community norms, neighborhood trends, and the family's extended environment. For example, neighbors might be either friendly and supportive toward one another or merely strangers. Extended environments include the parent's workplace, the media, and broader influences like school boards and politics. Other components of the exosystem are neighborhood and community safety, activities, and resources.

Next is the macrosystem, which consists of broad influences of culture such as geography, religion, nationality, and language. Features of the macrosystem might include a democratic form of government or a culture that provides free health care for all.

Finally, the chronosystem describes changes over time and major historical events that will influence infants' development, like being young during a global pandemic when many families worked from home, or growing up in times of war or natural disaster. The arrival of new technologies, such as radio, television, and the internet, is also an aspect of the chronosystem.

The layers of environmental factors in the ecological model can stack and influence one another. For instance, an economic downturn in the chronosystem can lower employment rates in the macrosystem, which in turn can reduce community vibrancy in the exosystem. These events may also put financial strain on caregivers, which can contribute to marital conflict in the mesosystem and hurt the quality of parent-infant interactions in the microsystem.

As the ecological model suggests, many community and contextual factors can bear on the quality of an infant's home environment. Community and cultural influences can place additional strain on families but also provide additional support and resources. Providing stability and support for the infant as they develop at each of these levels can lay the foundations for healthy development and well-being across the lifespan.

LINK TO LEARNING

Watch this video that describes Bronfenbrenner's ecological systems model and the ways it influenced policies and resources like Head Start (https://openstax.org/r/104BronfEcoSyst) to learn more.

Quality of Home Environments

Many factors in the home environment contribute to an infant's well-being. The quality of caregivers' interactions with infants is an influential predictor of long-term healthy developmental outcomes.

A major factor that can influence the quality of family interactions, in addition to the financial and time constraints mentioned earlier, is parental well-being. Parents struggling with medical problems like cancer, mental health concerns such as depression, or substance use and addiction may not have the ability to focus

on their infants as much as they would like. Finally, parents who face domestic violence, unsafe housing, or political unrest often cannot prioritize spending meaningful time with infants and toddlers and instead must focus on physical safety (Berge et al., 2020; Liel et al., 2020; Mattelin et al., 2024). However, as many responses to the COVID-19 pandemic showed, families with close relationships and strong protective factors can reduce these risks and promote resilience in children (Prime et al., 2020).

The quality of the home environment can be assessed in many ways, but one useful scale is the Home Observation for the Measure of the Environment (HOME) scale (Bradley & Caldwell, 1976; Totsika & Sylva, 2004). In this scale, quality of home environment is rated on three components, parental responsiveness, home cleanliness, and child cleanliness:

- *Parental responsiveness* assesses caregivers' attention, communication, and emotional support of their infants.
- *Home cleanliness* notes whether the child's play area is free of hazards, well lit, orderly, and includes toys.
- *Child cleanliness* looks at whether the child has access to medical care, eats at least once per day, and has clean clothes and hair.

The HOME scale was created in the United States but has been successfully adapted for other countries such as Bangladesh, Peru, and Tanzania (Jones et al., 2017). Across various countries, this adaptation was effective in measuring home environments and demonstrated that better home conditions are related to improved developmental outcomes (Jones et al., 2017). While this doesn't mean we have to have a perfectly clean home every day, it does indicate that the presence of basic care, a safe environment, and parents who are responsive can promote child well-being across many cultures and contexts.

Childcare Context

In the United States, one parent in many two-parent households in the past stayed home to care for the couple's infants and toddlers. Starting in the 1980s, a growing percentage of two-parent households became dual-income households, in which both caregivers worked outside the home and young infants were brought to childcare settings. There are various childcare settings from which families can choose and childcare quality can vary in several ways.

Childcare Settings

In **family care**, children are cared for by an extended family member in either the child's home or the caregiver's home. Infants and toddlers may spend the day with other children such as cousins, or they may receive one-on-one attention. In **nanny services**, an adult provides care in the child's home, either one-on-one or with their siblings. In both family care and nanny services, children are likely to have the stability of a familiar caregiver who provides for them in a familiar environment.

Childcare may also take place in another family's home. One example is **home day care**. Here, another family welcomes children into their home and provides care for them during daytime working hours. Home day-care centers are often regulated: providers have training and certification in early childhood education and are registered with the state or province. But providers can also be unregulated and may or may not have certification or training (Dowsett et al., 2008). In home day care, infants and toddlers interact with a few other children in a homelike environment.

Finally, childcare may also include **center care**, or day care centers, in which commercial properties such as childcare centers, early learning centers, and preschools offer care during daytime working hours (Figure 4.17). Infants and toddlers are often divided into classroom groups with similar-aged peers and receive care from a variety of staff members. Center care may be more highly regulated, though that can vary across center type, regions, and country guidelines. The center often must register with the state or province and be regularly inspected by government officials (Dowsett et al., 2008). While staff at these centers may be more likely to have a certification in early childhood education, many childcare centers struggle with having

appropriate training for staff, retention of staff, and quality of programming (Eadie et al., 2024; Hur et al., 2023; Eadie et al., 2022).

FIGURE 4.17 One type of childcare is center care, in which children are cared for in large classrooms with play spaces. Childcare centers around the world may also vary on adherence to public health protective measures, such as wearing masks during times of high community health risks. (credit: "Elizabeth Warren at Salem's YMCA Child Care Center" by Office of Senator Elizabeth Warren/Wikimedia Commons, Public Domain)

IT DEPENDS

What Type of Childcare Is Best?

With so many options for childcare, parents face a lot of choices when deciding what is best for their family. Family care may be more financially viable for many parents, and it is appealing for its potential to strengthen family bonds and preserve cultural values (Ferguson et al., 2020). Having one caregiver at home or having an extended relative provide care can give children a sense of security and facilitate their identity development within their family. But family care is not always possible, since both parents may need to work, and extended relatives may live far away or lack the skills, beliefs, or attitudes that match what parents desire. And for some single children, family care may reduce their opportunities to interact with many other children, which can be helpful to social development. However, many families may form parenting groups to provide playdates for their children.

Children who are more nervous or quiet, or who have developmental disabilities, may benefit from receiving care provided by another family in a home setting. Typically, in home care, a small number of children (six or fewer) play together in a provider's home. This arrangement can allow children to form close bonds with others without being overwhelmed by the stimulation of a larger commercialized center. It can also help them develop more confidence about leaving home and is a good stepping stone to the start of formal education. For example, some research shows that children with more a more difficult temperament benefit from early childcare education through improved social behaviors and peer interactions (Lindberg et al., 2019).

Finally, center care is beneficial for families who need reliable care. Whereas family care and home care might not be available during evenings or on holidays, commercialized childcare centers often have longer opening hours and extra staff on call for illness or emergencies. Being registered and regulated by government agencies,

center care is typically held to high standards and provides enrichment in cognitive, emotional, and physical stimulation. Centers often must pass rigorous safety checks as well. However, large centers can have outbreaks of disease, from stomach bugs to coughs, colds, and even lice. For some children with health considerations or weakened immunity, this care setting may not be the best option. Various settings may also carry risks of abuse, so paying careful attention to the quality and safety of whatever childcare option you choose is essential (Talmon et al., 2024). Specific risk factors of abuse in a day care setting include poor training of staff, lower quality facilities, and a high child/staff ratio. Prevention strategies to reduce risk of day-care maltreatment include better training for staff, particularly on emotion regulation and educating parents and health-care providers to screen for childcare abuse (Talmon et al., 2024).

Childcare Quality

All forms of childcare can vary in quality. Although center care is the most highly regulated, factors such as high turnover of staff members, crowded classrooms, and unkept play spaces and materials can lower the quality of care. Higher childcare quality is associated with better outcomes for children and improved parent-child relationships (Fischer et al., 2021). Regardless of childcare type, high-quality care typically has several common features:

- clean, spacious play areas with engaging toys and books
- good nutrition in the form of meals or snacks
- attentive caregivers with knowledge and experience with children
- small staff-to-infant ratios (one worker to three infants under eighteen months of age)
- low turnover among workers
- minimal screen time on TVs, tablets, and phones
- time for active play outdoors in a safe environment
- quiet spaces or times for infants and toddlers to rest

As more U.S. families began to send infants and toddlers to childcare in the increase of dual-earner homes, some people worried that such care would harm infants' social and emotional well-being, including their attachment, emotion regulation, and family relationships. In 1991, researchers associated with the National Institute of Child Health and Human Development (NICHD) began collecting data about newborns in ten locations around the United States. The infants were followed for fifteen years as part of the Study of Early Child Care and Youth Development (SECCYD) database. Results indicated overwhelmingly that children who attended childcare from an early age and those who did not had similar overall developmental outcomes, if the childcare provided was of high quality and children attended for less than nine hours per day (Vandell et al., 2010; Vandell & Gülseven, 2023).

In many cases, high-quality childcare can improve developmental outcomes for infants and toddlers from low-income households. The Head Start program, begun in 1965, is designed to help children from such households prepare for the start of formal education. Early Head Start targets infants and toddlers and provides enrichment through stimulating childcare environments that foster cognitive, social, emotional, and physical development, as well as a nutritional program. Enrollment in Early Head Start is associated with positive developmental outcomes in areas including school attendance, reading ability, development of emotion regulation skills, and physical health (Choi et al., 2019; Heberle & Chazan-Cohen, 2023). Early Head Start also decreases caregiver stress and is associated with lower rates of infant maltreatment (Green et al., 2020).

INTERSECTIONS AND CONTEXTS

Social Development and Family Income

Raising infants and toddlers is expensive. Costs may include formula, human milk pumping supplies, food, clothing, diapers, medical care, strollers and carriers, and a variety of safety gear ranging from car seats to baby gates. Families who are unemployed, underemployed, or underpaid often struggle with the costs of caring for newborns, especially alongside other rising costs like those for housing, utilities, and transportation.

Living with high financial strain can impact infant development, because it typically means parents are facing pressure to provide for their family and need to spend longer hours at work. Sometimes families cannot afford high-quality childcare, and infants and toddlers are left with inexperienced care providers who are unable to provide an enriched environment. Children may lack access to stimulating toys and books that would help foster their development. With the rising cost of groceries, providing healthy nutrition can also be a challenge, especially if toddlers are picky eaters.

In the United States, 17 percent of Black Americans and 17 percent of Hispanic Americans live in poverty, compared to 8 percent of White Americans and 8 percent of Asian Americans (Shrider & Creamer, 2023). In addition to poverty, Black and Hispanic families face other barriers such as employment discrimination, police harassment, and intergenerational trauma resulting from systemic racism, which can all affect the way families provide for infants and toddlers. A family worried about encountering racism from the community and/or local officials may be too anxious and stressed to attend to their children's emotional needs, preferring instead to prioritize their physical safety.

So, what can be done? Taxpayer and government support for community programs like school nutrition programs, community health centers, free children's bicycle programs, and public libraries can help provide low-income families with access to valuable resources. Being aware of systemic barriers that maintain inequities across ethnic, racial, and cultural groups is also important. For instance, school curricula that teach only about European American history, or school or workplace policies that discriminate against traditional hairstyles of Black people, may need to be updated to be inclusive of all individuals in the community. Together, these types of broad support can help improve the lives of families with infants and toddlers. Providing high-quality and inclusive education and health resources in early childhood can decrease health and other inequities across the lifespan (Halfon et al., 2020).

Socialization and Cultural Practices

Infants and toddlers are active in their environments, influencing others with smiles and cries, building attachment and relationships with caregivers, and forming the core components of their identity. Around the world, infants are learning to achieve these developmental milestones in many different contexts and cultures.

Although sleeping in bassinets or cribs is still common in Canada, co-sleeping with infants is popular in South Africa (Zaidman-Mograbi et al., 2020). More than 13 percent of infants and toddlers in Namibia experience fosterage, living away from their parents and with grandmothers, their fathers' second wives, or unrelated families (Edwards et al., 2015).

These cultural differences in childrearing practices can influence the social and emotional development of infants and toddlers. Families that provide close physical and emotional care (proximal care) may reinforce emotion regulation, whereas families that provide more hands-off (distal) and verbal emotional care by singing nursery rhymes encourage psychological control (Keller et al., 2004). Across a variety of parenting styles and cultures, there are small differences in self-regulation and self-recognition (Keller et al., 2004). For example, some cultures may focus on children's autonomy by encouraging early independence and toilet training, whereas others may stress the value of the family and teach toddlers the ways in which family members are

connected to one another (Keller, 2018). Finally, infants with a larger number of caregivers may learn a variety of skills, adapting to multiple social situations and developing improved vocabularies (Okocha et al., 2024). Regardless of the culture, family size, or family structure, infants and toddlers benefit when parents are more knowledgeable about raising children and are consistently supportive and responsive to them (Jeong et al., 2021; Leung & Suskind, 2020).

In recent decades, infant's and toddler's access to mobile devices has increased significantly, representing a cultural shift in a child's socioemotional environment (Radesky et al., 2020) (Figure 4.18). Cell phones and tablets can connect people but may also alter our (and our children's) responsiveness to those in our immediate environment (Roche et al., 2022). Screens and technology can provide benefits like video calling with extended family members, access to educational games, and opportunities to practice finger dexterity. However, there are developmental drawbacks to early exposure (Kracht et al., 2023).

Infants who spend more than fifteen hours per week watching screens are more likely to have delayed vocabulary growth and display attentional problems by the age of six years (Duch et al., 2013; Sundqvist et al., 2024). Caregivers who indulge in too much screen time are also at risk; parents who ignored infants' emotional cues to attend to a mobile device were more likely to report that their children had behavioral problems (McDaniel & Radesky, 2018). Finally, infants benefit from face-to-face interactions and learn more effectively from in-person interactions than from on-screen interactions. Interventions and education for parents about the benefits of parent-child play and reduced screen time can be effective in promoting healthy infant and toddler development (Adams et al., 2018).

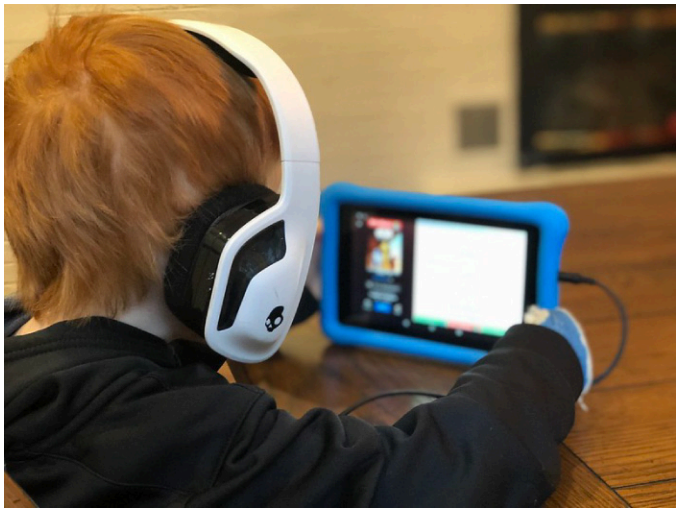


FIGURE 4.18 More infants and toddlers than ever before have access to personal electronic devices such as tablets and mobile phones. (credit: "Boy Wearing Headphones Listening to a Book on a Tablet" by Guitar Chalk. Source: https://www.guitarchalk.com accessed on Flickr, CC BY 2.0)

References

Adams, E. L., Marini, M. E., Stokes, J., Birch, L. L., Paul, I. M., & Savage, J. S. (2018). INSIGHT responsive parenting intervention reduces infant's screen time and television exposure. *The International Journal of Behavioral Nutrition and Physical Activity, 15*(1), 24. https://doi.org/10.1186/s12966-018-0657-5

Berge, J. M., Mountain, S., Telke, S., Trofholz, A., Lingras, K., Dwivedi, R., & Zak-Hunter, L. (2020). Stressful life events and associations with child and family emotional and behavioral well-being in diverse immigrant and refugee populations. *Families, Systems, & Health, 38*(4), 380–395. https://dx.doi.org/10.1037/fsh0000524

Biblarz, T. J., & Gottainer, G. (2000). Family structure and children's success: A comparison of widowed and divorced single-mother families. *Journal of Marriage and Family, 62*(2), 533–548. https://doi.org/10.1111/j.1741-3737.2000.00533.x

Bradley, R. H., & Caldwell, B. M. (1976). The relation of infants' home environments to mental test performance at fifty-four months: A follow-up study. *Child Development, 47*(4), 1172–1174. https://doi.org/10.2307/1128457

Bronfenbrenner U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*(7), 513–531. https://doi.org/10.1037/0003-066X.32.7.513

Calarco, J. M., Meanwell, E., Anderson, E. M., & Knopf, A. S. (2021). By default: How mothers in different-sex dual-earner couples account for inequalities in pandemic parenting. *Socius, 7*, 1–15, 23780231211038783. https://doi.org/10.1177/23780231211038783

Chodura, S., Lohaus, A., Symanzik, T., Heinrichs, N., & Konrad, K. (2021). Foster parents' parenting and the social-emotional development and adaptive functioning of children in foster care: A PRISMA-guided literature review and meta-analysis. *Clinical Child and Family Psychology Review, 24*(2), 326–347. https://doi.org/10.1007/s10567-020-00336-y

Choi, J. Y., Horm, D., Jeon, S., & Ryu, D. (2019). Do stability of care and teacher-child interaction quality predict child outcomes in early head start? *Early Education and Development, 30*(3), 337–356. https://doi.org/10.1080/10409289.2018.1546096

Chung, H. (2021). *Shared care, father's involvement in care and family well-being outcomes: A literature review*. School of Social Policy, Sociology and Social Research, University of Kent. https://kar.kent.ac.uk/85742/11/Shared_care_and_well-being_outcomes-_Literature_review.pdf

DeGroot, J. M., & Vik, T. A. (2020). "The Weight of Our Household Rests on My Shoulders": Inequity in Family Work. *Journal of Family Issues*, *41*(8), 1258–1281. https://doi.org/10.1177/0192513X19887767
Dowsett, C. J., Huston, A. C., Imes, A. E., & Gennetian, L. (2008). Structural and process features in three types of child care for children from high and low income families. *Early Childhood Research Quarterly, 23*(1), 69–93. https://doi.org/10.1016/j.ecresq.2007.06.003
Duch, H., Fisher, E. M., Ensari, I., & Harrington, A. (2013). Screen time use in children under 3 years old: A systematic review of correlates. *The International Journal of Behavioral Nutrition and Physical Activity, 10*(1), 1–10, 102. https://doi.org/10.1186/1479-5868-10-102
Dugan, A. G., & Barnes-Farrell, J. L. (2020). Working mothers' second shift, personal resources, and self-care. *Community, Work & Family*, *23*(1), 62–79. https://doi.org/10.1080/13668803.2018.1449732
Eadie, P., Page, J., Levickis, P., Elek, C., Murray, L., Wang, L., & Lloyd-Johnsen, C. (2022). Domains of quality in early childhood education and care: A scoping review of the extent and consistency of the literature. *Educational Review, 76*(4), 1057–1086. https://doi.org/10.1080/00131911.2022.2077704
Edwards, C. P., Ren, L., & Brown, J. (2015). Early contexts of learning: Family and community socialization during infancy and toddlerhood. *The Oxford Handbook of Human Development and Culture*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199948550.013.11
Farr, R. H., & Vazquez, C. P. (2020). Stigma experiences, mental health, perceived parenting competence, and parent-child relationships among lesbian, gay, and heterosexual adoptive parents in the United States. *Frontiers in Psychology, 11*, 445. https://doi.org/10.3389/fpsyg.2020.00445
Ferguson, J., Lampkins, C., Moody, B., & Shpancer, N. (2020). Careful choices: Parents reflect on their childcare decisions. *Child Care in Practice, 28*(3), 368–380. https://doi.org/10.1080/13575279.2020.1765147
Fischer, I., Schober, P. S., & Nagengast, B. (2021). Parental relationship quality and children's behavioral problems: Childcare quality as a protective factor? *Journal of Family Research, 33*(3), 703–733. https://doi.org/10.20377/jfr-379https://www.researchgate.net/publication/353416656_Parental_relationship_quality_and_children's_behavioural_problems_Childcare_quality_as_a_protective_factor
Ginther, D. K., Pollak, R. A. (2004). Family structure and children's educational outcomes: Blended families, stylized facts, and descriptive regression. *Demography, 41*(4), 671–696. https://doi.org/10.1353/dem.2004.0031
Green, B. L., Ayoub, C., Bartlett, J. D., Furrer, C., Chazan-Cohen, R., Buttitta, K., Von Ende, A., Koepp, A., & Regalbuto, E. (2020). Pathways to prevention: Early Head Start outcomes in the first three years lead to long-term reductions in child maltreatment. *Children and Youth Services Review, 118*, 105403. https://doi.org/10.1016/j.childyouth.2020.105403
Halfon, N., Aguilar, E., Stanley, L., Hotez, E., Block, E., & Janus, M. (2020). Measuring equity from the start: Disparities in the health development of US kindergartners: Study examines disparities in the health development of US kindergartners. *Health Affairs, 39*(10), 1702–1709. https://doi.org/10.1377/hlthaff.2020.00920
Heberle, A. E. & Chazan-Cohen, R. (2023). Longitudinal and reciprocal relations among parent and child outcomes for Black Early Head Start families. *Early Education and Development, 34*(2), 387–407. https://doi.org/10.1080/10409289.2022.2045461
Hur, E. H., Ardeleanu, K., Satchell, T. W., & Jeon, L. (2023). Why are they leaving? Understanding Associations between early childhood program policies and teacher turnover rates. Child *Youth Care Forum*, 52(2), 417–440. https://doi.org/10.1007/s10566-022-09693-x
Jeong, J., Franchett, E. E., Ramos de Oliveira, C. V., Rehmani, K., & Yousafzai, A. K. (2021). Parenting interventions to promote early child development in the first three years of life: A global systematic review and meta-analysis. *PLoS Medicine, 18*(5), e1003602. https://doi.org/10.1371/journal.pmed.1003602
Jones, P. C., Pendergast, L. L., Schaefer, B. A., Rasheed, M., Svensen, E., Scharf, R., Shrestha, R., Maphula, A., Roshan, R., Rasmussen, Z., Seidman, J. C., & Murray-Kolb, L. E. (2017). Measuring home environments across cultures: Invariance of the HOME scale across eight international sites from the MAL-ED study. *Journal of School Psychology, 64*, 109–127. https://doi.org/10.1016/j.jsp.2017.06.001
Keller, H. (2018). Parenting and socioemotional development in infancy and early childhood. *Developmental Review, 50*(A), 31–41. https://doi.org/10.1016/j.dr.2018.03.001
Keller, H., Yovsi, R., Borke, J., Kärtner, J., Jensen, H., & Papaligoura, Z. (2004). Developmental consequences of early parenting experiences: Self-recognition and self-regulation in three cultural communities. *Child Development, 75*(6), 1745–1760. https://doi.org/10.1111/j.1467-8624.2004.00814.x
Kracht, C. L., Redman, L. M., Bellando, J., Krukowski, R. A., & Andres, A. (2023). Association between maternal and infant screen time with child growth and development: a longitudinal study. *Pediatric Obesity, 18*(7), e13033. https://doi.org/10.1111/ijpo.13033
Leung, C. Y., & Suskind, D. L. (2020). What parents know matters: Parental knowledge at birth predicts caregiving behaviors at 9 months. *The Journal of Pediatrics, 221*, 72–80. https://doi.org/10.1016/j.jpeds.2019.12.021
Li, W. D. H., & Huang, J.-W. (2017). Housing the intergenerational families: Married couples coresident with parents in Taiwan. *Journal of Family History, 42*(1), 54–66. https://doi.org/10.1177/0363199016681607
Liel, C., Ulrich, S. M., Lorenz, S., Eickhorst, A., Fluke, J., & Walper, S. (2020). Risk factors for child abuse, neglect and exposure to intimate partner violence in early childhood: Findings in a representative cross-sectional sample in Germany. *Child Abuse & Neglect, 106*, 104487. https://doi.org/10.1016/j.chiabu.2020.104487
Mattelin, E., Paidar, K., Söderlind, N., Fröberg, F., & Korhonen, L. (2024). A systematic review of studies on resilience and risk and protective factors for health among refugee children in Nordic countries. *European Child & Adolescent Psychiatry, 33*(3), 667–700. https://doi.org/10.1007/s00787-022-01975-y
McDaniel, B. T., & Radesky, J. S. (2018). Technoference: Parent distraction with technology and associations with child behavior problems. *Child Development, 89*(1), 100–109. https://doi.org/10.1111/cdev.12822
Nomaguchi, K., & Milkie, M. A. (2020). Parenthood and well-being: A decade in review. *Journal of Marriage and Family, 82*(1), 198–223. https://doi.org/10.1111/jomf.12646
Okocha, A., Burke, N., & Lew-Williams, C. (2024). Infants and toddlers in the United States with more close relationships have larger vocabularies. *Journal of Experimental Psychology: General*. Advance online publication. https://doi.org/10.1037/xge0001609
Paine, A. L., Perra, O., Anthony, R., & Shelton, K. H. (2021). Charting the trajectories of adopted children's emotional and behavioral problems: The impact of early adversity and postadoptive parental warmth. *Development and Psychopathology, 33*(3), 922–936. https://doi.org/10.1017/s0954579420000231
Patterson, C. J. (2024). Parental Sexual Orientation, Parental Gender Identity, and the Development of Young Children. In J. D. Osofsky, H. E. Fitzgerald, M. Keren, K. Puura (Eds.), WAIMH Handbook of Infant and Early Childhood Mental Health, vol. 1 (pp. 373–390). https://doi.org/10.1007/978-3-031-48627-2_22
Prime, H., Wade, M., & Browne, D. T. (2020). Risk and resilience in family well-being during the COVID-19 pandemic. *American Psychologist, 75*(5), 631–643. http://dx.doi.org/10.1037/amp0000660
Radesky, J. S., Weeks, H. M., Ball, R., Schaller, A., Yeo, S., Durnez, J., Tamayo-Rios, M., Epstein, M., Kirkorian, H., Coyne, S., & Barr, R. (2020). Young children's use of smartphones and tablets. *Pediatrics, 146*(1), e20193518. https://doi.org/10.1542/peds.2019-3518
Roche, E., Rocha-Hidalgo, J., Piper, D., Strouse, G. A., Neely, L. I., Ryu, J., Myers, L. J., McClure, E., Troseth, G. L., Zosh, J. M., & Barr, R. (2022). Presence at a distance: Video chat supports intergenerational sensitivity and positive infant affect during COVID-19. *Infancy, 27*(6), 1008–1031. https://doi.org/10.1111/infa.12491
Sayer, L. C. (2016). Trends in women's and men's time use, 1965–2012: Back to the future? In S. McHale, V. King, J. Van Hook, & A. Booth (Eds.), Gender and couple relationships. *National Symposium on Family Issues, 6*, 43–77. http://dx.doi.org/10.1007/978-3-319-21635-5_2
Shrider, E. A. & Creamer, J. (2023). Poverty in the United States, 2022. United States Census Bureau. https://www.census.gov/library/publications/2023/demo/p60-280.html
Sundqvist, A., Barr, R., Heimann, M., Birberg-Thornberg, U., & Koch, F.-S. (2024). A longitudinal study of the relationship between children's exposure to screen media and vocabulary development. *Acta Paediatrica, 113*(3), 517–522. https://doi.org/10.1111/apa.17047
Talmon, A., Ditzer, J., Talmon, A., & Tsur, N. (2024). Maltreatment in daycare settings: a review of empirical studies in the field. *Trauma, Violence, & Abuse, 25*(1), 512–525. https://doi.org/10.1177/15248380231155528
Tornello, S. L., & Patterson, C. J. (2018). Adult children of gay fathers: Parent-child relationship quality and mental health. *Journal of Homosexuality, 65*(9), 1152–1166. https://doi.org/10.1080/00918369.2017.1406218
Totsika V., & Sylva, K. (2004). The home observation for measurement of the environment revisited. *Child and Adolescent Mental Health, 9*(1), 25–35. https://doi.org/10.1046/j.1475-357x.2003.00073.x
Van Gasse, D., & Mortelmans, D. (2020). Single mothers' perspectives on the combination of motherhood and work. *Social Sciences, 9*(5), 85. https://doi.org/10.3390/socsci9050085
Vandell, D. L., & Gülseven, Z. (2023). The study of Early Child Care and Youth Development (SECCYD): Studying development from infancy to adulthood. *Annual Review of Developmental Psychology, 5*(1), 331–354. https://doi.org/10.3390/socsci9050085
Vandell, D. L., Belsky, J., Burchinal, M., Steinberg, L., & Vandergrift, N. (2010). Do effects of early child care extend to age 15 years? Results from the NICHD Study of Early Child Care and Youth Development. *Child Development, 81*(3), 737–756. https://doi.org/10.1111/j.1467-8624.2010.01431.x
Wade, M., Parker, V., Tang, A., Fox, N. A., Zeanah, C. H., & Nelson, C. A. (2024). Linking caregiving quality during infancy to brain activity in early childhood and later executive function. *Developmental Science*, e13517. https://doi.org/10.1111/desc.13517
Wilson, B. D. M., & Bouton, L. J. A. (2024). *LGBTQ parenting in the US*. UCLA School of Law, Williams Institute. https://williamsinstitute.law.ucla.edu/publications/lgbt-parenting-us/
Yarger, H. A., Bernard, K., Caron, E. B., Wallin, A., & Dozier, M. (2020). Enhancing Parenting Quality for Young Children Adopted Internationally: Results of a Randomized Controlled Trial. *Journal of Clinical Child and Adolescent, 49*(3), 378–390. https://doi.org/10.1080/15374416.2018.1547972
Zaidman-Mograbi, R., le Roux, L., & Hall, H. (2020). The influence of culture on maternal attachment behaviors: A South African case study. *Children Australia, 45*(1), 30–39. http://dx.doi.org/10.1017/cha.2020.4

Key Terms

attachment emotional and affective bond between an infant and their primary caregiver
attention-seeking behavior emotion regulation strategy that consists of an effort to obtain a caregiver's attention for comfort and support
attentional distraction emotion regulation strategy that consists of turning away from a stressful sound, sight, or event
autonomy sense of independence or freedom to control yourself and your actions
autonomy versus doubt second stage in Erikson's theory of personality development, in which the toddler forms a sense of autonomy based on whether they are encouraged to try new skills and tasks
blended family family that includes stepparents or stepsiblings
body-as-obstacle test test of self-awareness in which an infant needs to move their body to accomplish a goal
center care childcare provided in a commercial center that is regulated and licensed by the government
commuter family family in which one or more family members split their time between households
difficult temperament (undercontrolled/exuberant) temperament in which the infant has an irregular routine, high intensity, and negative mood and is slow to adapt to new experiences
disorganized attachment pattern of behavior in which infants are confused or inconsistent in their response to the absence of their caregiver
dyadic regulation process of calming an infant down through touch, feeding, or distraction
easy temperament (resilient) temperament in which an infant may be more adaptable and able to thrive in a variety of contexts, establishes a routine quickly, and typically has a positive mood
effortful control includes traits related to impulse control and inhibition, including the ability to maintain attention and control responses to experiences
emotion temporary affective state or feeling that influences an individual's physiology, facial expressions, and motivations
emotion regulation ability to calm ourselves and move from a state of high arousal to a state of lower arousal
emotional awareness insight into one's own emotional state and that of others
emotional labeling process of recognizing and identifying one's own current affective state
escape behavior emotion regulation strategy that consists of distancing or removing ourselves from an upsetting event or experience
family two or more persons who are legally or genetically related, who act as a unit, and who share financial resources
family care childcare provided by family members in the child's home or the relative's home
gender socialization the process by which individuals are exposed to and learn gender roles and expectations in their culture
gender stereotypes societal expectations and assumptions based on an individual's sex or gender identity
goodness of fit degree to which an infant's temperament and their surrounding environment match and complement each other
home daycare childcare provided in another home by another family, either formally or informally
insecure ambivalent attachment pattern of behavior in which infants become especially distressed during both the absence of their caregiver and their return
insecure avoidant attachment pattern of behavior in which infants show indifference to the absence and return of their caregiver
intergenerational family family that includes aunts, uncles, cousins, or grandparents
internal working model infants' cognitive understanding of how relationships work and their expectations
involuntary imitation immediate, reflexive imitation that occurs in infants between two and four months of age
joint attention when infants focus their attention on the same object, person, or experience as a social partner
kewpie doll effect motivation to care for an infant because of their rounded features
mirror neurons neurons that react when individuals observe another individual and then perform the same

action

mirror test (also, rouge test) test of infant visual self-recognition in which the baby is placed in front of a mirror with a red mark on their nose

moods long-lasting dispositions that describe an individual's level of arousal and pleasure

nanny services childcare provided by a nonfamily member who cares for children at the child's home

negative affectivity tendency to experience and express distress, discomfort, and avoidance behavior; associated with lower emotion regulation

nuclear family family that includes two caregivers and their children

object-relations theory theory about the way infants begin to understand their world through their relationship with their primary caregiver

personality long-lasting pattern of behavior, attitudes, thoughts, and emotions consistent across childhood, adolescence, and adulthood

primary caregiver individual who spends the most time caring for an infant in the first year of life

primary emotions biologically based feelings that appear early in the first year of life and are associated with distinct and universal facial expressions

secondary emotions situationally specific emotions that start to develop in the second year of life and require infants to have a sense of self

secure attachment pattern of behavior in which infants become distressed during the absence of their caregiver but feel secure and comforted upon the caregiver's return

secure base safe place the caregiver gives the infant from which to explore the world around them

self-conscious emotions secondary emotions that respond to an individual's awareness of how others view them

self-recognition ability to visually identify ourselves when looking at a mirror or a photo

self-soothing emotion regulation strategy that consists of calming ourselves through sucking, breathing, and relaxation

sense of self awareness of self as different from others

separation anxiety distress that infants feel when their primary caregiver is absent

single-parent family family that includes one caregiver and their children

slow-to-warm-up temperament (overcontrolled/inhibited) temperament in which infant may be more prone to anxious or fearful behavior and have a lower activity level and lower mood intensity

social cognition ability to understand another person's thoughts, emotions, or intentions

social referencing strategy of looking at others to see how they are responding during ambiguous and novel situations to inform one's own reaction

social smile involuntary smile that infants begin to display at approximately two months of age in response to seeing another smiling face

Strange Situation experiment in which infants and primary caregivers are separated and reunited multiple times in a research lab to examine attachment style

stranger anxiety infant's fear reaction when encountering a new person or someone they do not often see

surgency (also, extraversion) a trait characterized by high levels of physical activity, sociability, and spontaneity

synchrony interaction between caregiver and child involving responding to each other's emotions in reciprocal and sensitive ways

temperament innate, biological components of individuality present as consistent patterns of behavior shortly after birth

transgenerational attachment attachment patterns passed down through generations of one family

trust versus mistrust first stage in Erikson's theory of personality development, in which infants form a sense of trust toward others based on how reliably their caregivers meet their needs

voluntary imitation purposeful imitation of others' gestures and facial expressions that infants begin to display at approximately eight months of age

Summary

4.1 Autonomy and Sense of Self in Infants and Toddlers

- Infants start to develop a sense of self as separate from others through understanding what they can and cannot control in their environment.
- Infants do not recognize their reflection in mirrors until approximately eighteen months of age.
- Infants further develop self-awareness through understanding their body as an obstacle.
- Infants experience gender socialization through interactions with caregivers, social and cultural experiences, and perceived expectations of their behavior. They learn how to label their gender by age three years.

4.2 Temperament and Personality in Infants and Toddlers

- Infants are born with biologically based components of individuality known as temperament.
- Temperament can be shaped and modified by parents and culture and can predict personality traits in childhood and adolescence.
- Personality begins to form in infancy and is shaped by biology, environment, and temperament. Personality theories include trait theories like the Big Five theory.
- According to Erikson's theory, during the first few years of life, individuals face the challenges of trust versus mistrust and autonomy versus doubt, which help develop trust in others and autonomy and self-confidence.

4.3 Emotional Development in Infants and Toddlers

- Moods are long-lasting levels of arousal and pleasure, in contrast to emotions, which are temporary states.
- Primary emotions are biologically based and appear in the first year of life, whereas secondary emotions are situational and emerge in the second year of life.
- Self-conscious emotions involve an infant being aware of how others view them.
- Infants often depend on their caregivers to help with emotion regulation, but basic skills do emerge in infancy and toddlerhood.
- Emotional intelligence and awareness of others' emotions also develop at this time.

4.4 Social Development in Infants and Toddlers

- Imitation—first involuntary and later voluntary—fosters an emotional bond between infants and their caregivers.
- Infants learn how to process emotions by watching their caregiver and by practicing social referencing.
- The emotional attachment between an infant and a primary caregiver has been theorized to have biological, evolutionary, and cognitive components.
- The Strange Situation is an experiment in which different behavioral patterns are identified as characteristic of different attachment styles.
- Attachment is also influenced by cultural and ecological processes; types of attachment at twelve months of age can vary between cultures.

4.5 Social Contexts and Influences in Infants and Toddlers

- There are many types of families, but what most strongly influences infant outcomes is the number of caregivers, which affects the level of financial and time strains.
- Families are embedded within layers of cultural and community influences that affect infant development.
- Childcare options are varied, but high-quality childcare does not harm the emotional and social well-being of toddlers and children.
- Childrearing practices vary across cultures and can influence which skills are fostered and when.

Review Questions

1. Infants begin to form their identity when they first realize the difference between which of the following?
   a. their feet and hands
   b. animals and people
   c. daytime and nighttime
   d. themselves and others

2. What does a fourteen-month-old infant typically do when they look at themselves in a mirror?
   a. touch their nose
   b. show either wariness or openness
   c. touch their ears
   d. wave at their reflection

3. Which of the following is a component of gender identity and not biological sex?
   a. preference for toys
   b. genetic expression
   c. prenatal hormones
   d. external genitalia

4. What is a temperamental trait linked with low or high interest or nervousness in new situations and places?
   a. activity
   b. distractibility
   c. intensity
   d. adaptability

5. When researchers say that temperament is largely genetic, what claim are they making about it?
   a. Temperament is based on environment.
   b. Temperament is biologically innate.
   c. Temperament changes regularly.
   d. Temperament is learned.

6. In what important way does Erikson's psychosocial theory differ from Freud's psychosexual theory?
   a. Erikson focuses on biological satisfaction; Freud does not.
   b. Erikson examines development only in infancy; Freud examines the entire lifespan.
   c. Erikson discusses both psychological and social bonds; Freud only looks at social bonds.
   d. Erikson states that earlier dilemmas cannot be revisited; Freud says that they can.

7. If an infant is picked up and cared for as needed by a trusted adult in the first year of life, what are they likely to develop, according to Erikson's theory of psychosocial development?
   a. trust
   b. mistrust
   c. autonomy
   d. shame

8. What is a primary emotion connected with wanting to overcome an obstacle?
   a. joy
   b. sadness
   c. anger

d. fear

9. Which choice is one of the six states of arousal that is experienced by newborns?
a. angry
b. happy
c. deep sleep
d. laughing

10. Which emotion regulation strategy consists of covering your eyes and turning away?
a. attentional distraction
b. escape behavior
c. self-soothing
d. attention-seeking behavior

11. What type of attachment is displayed by an infant who is indifferent to their caregiver's leaving and returning?
a. ambivalent
b. secure
c. avoidant
d. disorganized

12. At what stage of attachment do toddlers start to tolerate separation from their primary caregiver?
a. indiscriminate social responsiveness
b. discriminating sociability
c. specific, enduring affective bonds
d. goal-corrected partnerships

13. What is social referencing?
a. becoming distressed when a caregiver goes away
b. imitating a caregiver when they are in another room
c. using a caregiver's emotion to navigate a new situation
d. showing a preference for unfamiliar social interactions

14. What type of family includes stepparents?
a. nuclear family
b. single-parent family
c. intergenerational family
d. blended family

15. In what type of childcare do providers welcome other children into their homes?
a. home day care
b. family care
c. center care
d. nanny care

16. What level of ecological influence includes broad cultural components such as religion and geography?
a. chronosystem
b. macrosystem
c. exosystem
d. mesosystem

Check Your Understanding Questions

17. What is one difference between the goals of the mirror test and the body-as-obstacle test?

18. What are the various components of sense of self?

19. Which temperamental traits map onto Big Five personality traits?

20. What are the psychosocial stages of infancy and toddlerhood in Erikson's theory, and how does environment play a role in each?

21. What is the difference between moods and emotions?

22. What is the difference between primary and secondary emotions?

23. How do German and Japanese twelve-month-old infants differ in attachment type from U.S. infants?

24. How are stranger anxiety and separation anxiety similar, and how are they different?

25. What are the three components of the HOME scale?

26. Describe a few of the factors that create high-quality childcare.

Personal Application Questions

27. Reflect on a time when you observed an infant or toddler exploring their environment, similar to how Elyse engaged with objects and people around her. How did the child's actions demonstrate their emerging sense of autonomy and individuality? How do these observations align with the concepts of autonomy and self-awareness discussed in this section?

28. Consider the toys, activities, and behaviors you were encouraged to engage with as a child. How do you think these experiences shaped your early understanding of gender identity? Reflect on the role of gender socialization in your development and how it might compare to other cultural or familial experiences.

29. Recall an experience from your own childhood or from observing others where gender stereotypes were either reinforced or challenged. How did this experience influence your or the child's sense of self and gender identity? What might be the long-term impacts of these early gender socialization experiences?

30. Reflect on your own temperament as a child. Can you identify with one of the temperament clusters described by Thomas and Chess—easy, difficult, or slow-to-warm-up? How do you think your early temperament influenced your personality as you grew older? Consider any early memories or stories shared by your caregivers.

31. Think about the role your environment played in shaping your temperament during infancy and toddlerhood. Were there specific ways in which your caregivers or surroundings either reinforced or discouraged certain temperamental traits? How might these early interactions have impacted your current behavior and personality?

32. Reflect on the stage of autonomy versus doubt, which occurs during toddlerhood according to Erikson. Were there moments in your early life where you felt encouraged to explore and be independent, or were there times when you felt doubt or shame in trying new things? How have these early experiences shaped your confidence in making decisions and taking on challenges today?

33. Think about a moment when you felt a secondary emotion, such as pride or guilt. What triggered this emotion, and how did it differ from primary emotions like joy or sadness in that situation?

34. Think back to your early childhood, particularly during the 'terrible twos' phase. If possible, ask your caregiver about how you managed your emotions during that time. Were you often irritable, or did you exhibit other strong emotions? Reflect on the levels of arousal and types of emotions you showed as an infant or toddler. How do you think these early emotional tendencies have influenced your emotional

control today?

35. Think back to your earliest memories of interactions with caregivers or older siblings. Can you recall moments when you were especially attached to a caregiver or very distressed when separated from them? If possible, ask your caregiver about your early experiences. How do these memories or stories align with the concepts of attachment theory?

36. Reflect on your cultural background and family dynamics. How were you encouraged to express or regulate your emotions as a child? Did your family emphasize closeness and dependence, or was independence encouraged early on? How might this have influenced your attachment style?

37. Can you remember a time when you or someone you know experienced separation anxiety, such as when starting school, daycare, or even camp? How did caregivers or adults in your life help manage those feelings? What strategies or support systems made the separation easier, and what could have been done differently to ease the transition?

38. Think about your family structure during your early childhood years. Who were the primary caregivers in your life? How did the presence or absence of multiple caregivers affect your social and emotional development? Reflect on how your family structure may have influenced your early interactions with others.

39. Consider the cultural context in which you were raised. What cultural practices or values shaped your early social and emotional development? How did your family's cultural background influence the way you were encouraged to express emotions or interact with others?

40. Think back to any childcare settings you were part of as an infant or toddler, such as family care, daycare centers, or nanny care. How did these experiences shape your social and emotional development? What aspects of your childcare experience do you think were beneficial, and what could have been improved?

Essay Questions

41. Reflect on the development of autonomy in infants and toddlers. How does the ability to explore their environment and make independent choices, such as asserting "no," contribute to their sense of self? Discuss how these early signs of independence reflect the child's growing understanding of self versus others and the role of caregivers in supporting this development.

42. Analyze the role of caregivers in fostering self-recognition and self-awareness in infants. How do interactions, such as the mirror test and verbal prompts, contribute to the development of an infant's sense of self? Discuss the significance of these milestones and provide examples of how early experiences with caregivers can influence the trajectory of self-development.

43. Analyze Erikson's first two stages of psychosocial development—trust versus mistrust and autonomy versus doubt. How do these stages relate to the development of temperament and early personality in infants and toddlers? Provide examples of how caregivers' responses during these stages can influence a child's long-term emotional and social development.

44. Discuss the relationship between emotion, mood, and emotion regulation in infants and toddlers. How do these elements interact to influence early development? Provide examples of how caregivers can support healthy emotional development during this stage.

45. Reflect on the cultural influences on emotion regulation. How might a child's cultural background shape the way they learn to manage their emotions? Provide specific examples to illustrate your points.

46. Analyze the role of imitation in the social development of infants and toddlers. How does imitation contribute to the development of social skills and emotional bonds between infants and their caregivers? Provide examples of how infants use imitation in their early interactions and discuss the importance of these behaviors in the context of their overall development.

47. Discuss the impact of different family structures on the social and emotional development of infants and toddlers. Consider how single-parent, nuclear, and intergenerational families might influence a child's early development. Use examples to illustrate how the presence or absence of multiple caregivers can shape early childhood experiences.

48. Evaluate the role of community and environmental contexts in shaping the social development of infants and toddlers. How do factors such as neighborhood safety, community resources, and social networks influence a child's early development? Discuss the potential positive and negative impacts of these environmental factors.

Physical and Cognitive Development in Early Childhood (Ages 3 to 6)

5

FIGURE 5.1 Early childhood is a time of extensive physical and cognitive growth. The awkwardness of toddlerhood gives way to smooth physical movement. An explosion of words arrives that expands thinking as well as socioemotional growth. (credit: modification of work "A Spring in your camp, CYTP members join Spring Camp 140319-M-TH981-002" by Kristen Wong, United States Marine Corps/Wikimedia Commons, Public Domain)

CHAPTER OUTLINE

5.1 Physical Health and Growth in Early Childhood
5.2 Motor Development and Physical Skills in Early Childhood
5.3 Cognition in Early Childhood
5.4 Language in Early Childhood
5.5 Play in Early Childhood

WHAT DOES PSYCHOLOGY SAY? Kai and Taylor want the best for their child, always striving to make sure Maxie is stimulated and has the best resources to enhance both physical and cognitive development. At five years old, Maxie attends kindergarten, plays organized soccer, practices piano, and has plenty of coloring sheets and educational games at home to explore. Kai and Taylor like eating a wide variety of foods, and they offer Maxie different tastes, textures, and flavors to encourage a preference for healthy options.

Kai and Taylor are concerned they may be overscheduling Maxie. Yet they also worry that they may not be offering enough stimulation because they are both at work until dinnertime. They recognize that many other upper-middle class parents struggle with these same issues, and they get differing opinions from their friends. They often find themselves wondering:

- Do all young children prefer to eat pizza, nuggets, and peanut butter sandwiches, or is Maxie's preference for these items a cause for concern?
- When is the best time to teach Maxie a second language?
- Which does Maxie need more right now—free play or structured activities?
- Is screentime inherently bad for Maxie, or could it be beneficial?

This chapter provides scientific and practical answers to these types of questions and others about physical and cognitive development in early childhood.

5.1 Physical Health and Growth in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify growth trends and influences in physical growth and brain development in early childhood
- Discuss nutritional needs and healthy eating habits in early childhood
- Describe healthy sleep practices and patterns in early childhood
- Identify risks to health and wellness and protective measures to promote health in early childhood

Tyrone is six years old. Like other children his age, he is experiencing significant changes in his physical abilities, including gross and fine motor skills, sensory development, and coordination. When Tyrone visits his grandmother, she marks his height on a wall chart as a memento. Just a few years ago, Tyrone was fumbling through his first steps, but now he is standing tall and running confidently at the park with school friends. He's no longer the infant who chews on board books, but a first grader who eagerly reads.

In this section, you'll explore topics related to the physical health of children between the ages of three and six, such as typical growth during this period of life and optimal nutrition and sleep needs. You'll learn about how parents, health-care providers, and caregivers can best protect and advocate for healthy childhood development—and set the stage for future health.

Physical and Neurodevelopmental Growth

Physical development during early childhood continues to be directed by biological factors. However, opportunities and experiences yield many differences among children. For example, nutrition and sleep contribute to individual variations, even within one household. And group differences can occur when populations of children have different access to resources such as fresh food.

Physical Proportions and Height

In the United States, on average, children gain between 2 and 3 inches (approximately 5–7.5 cm) in height and 4 to 5 pounds (approximately 1.8–2.25 kg) in weight per year between ages three and six (MedlinePlus, 2022) (Figure 5.2). A key change during this period is the development of more adult-like body proportions. The head accounts for a steadily decreasing proportion of body length throughout the childhood years (recall the cephalocaudal principle). Legs grow proportionally longer, allowing children to become more mobile, more agile, and better able to balance and coordinate their movements. While three-year-olds tend to have cylindrical body shapes, with little definition between the waist and hips, the average six-year-old has a more hourglass-like shape. This change will eventually become more marked for girls, who will develop wider hips and narrower waists at puberty. At six years of age, the average child in the United States is 45 inches tall (approximately 115 cm) and weighs 45 pounds (approximately 20.4 kg) (Centers for Disease Control and Prevention [CDC], 2023).

FIGURE 5.2 The relative growth comparison between a three-year-old and six-year old child, such as these siblings, shows some aspects of the physical changes that occur across these early childhood years. (credit: "Siblings: 3 and 6 years old" by Eric & Laurel Glenn/Flickr, CC BY 4.0)

LINK TO LEARNING

See the World Health Organization (WHO) child growth standards (https://openstax.org/r/104GrowthStds) and the United States Centers for Disease Control and Prevention (CDC) growth charts (https://openstax.org/r/104GrowthChart) to learn more. These standards highlight the importance of averages because they show not only how a child is growing in comparison with other children but also whether their own growth is proportional. If a child is far outside the average or out of proportion, this data gives medical professionals more information about the health needs of that child.

Evidence indicates that the full height potential of our genetic inheritance is affected by several environmental influences. Economic disadvantage, physical neglect, disease, and malnutrition can affect biological and epigenetic mechanisms associated with height, which can take several generations to return to the normal range (Bogin, 2013; Lang et al., 2019; Simeone & Alberti, 2014). These influences may partly explain generational variations in height.

One directly observable consequence of malnutrition is **stunting**, or impaired growth in height (Figure 5.3). Stunting, which cannot be reversed and can increase risks for cognitive and physical damage, has become a global concern (De Sanctis et al., 2021; Bhutta et al., 2020). Particularly in war-torn, severely impoverished, and drought-stricken areas, inadequate nutrition is widespread, and stunting is an inherent risk. As a result, an estimated 149 million children under five, or more than 20 percent of the global under-five population, undergo stunting. In some poor parts of Africa and southern Asia, the proportion rises to nearly half (UNICEF/World Health Organization [WHO]/World Bank Group, 2021).

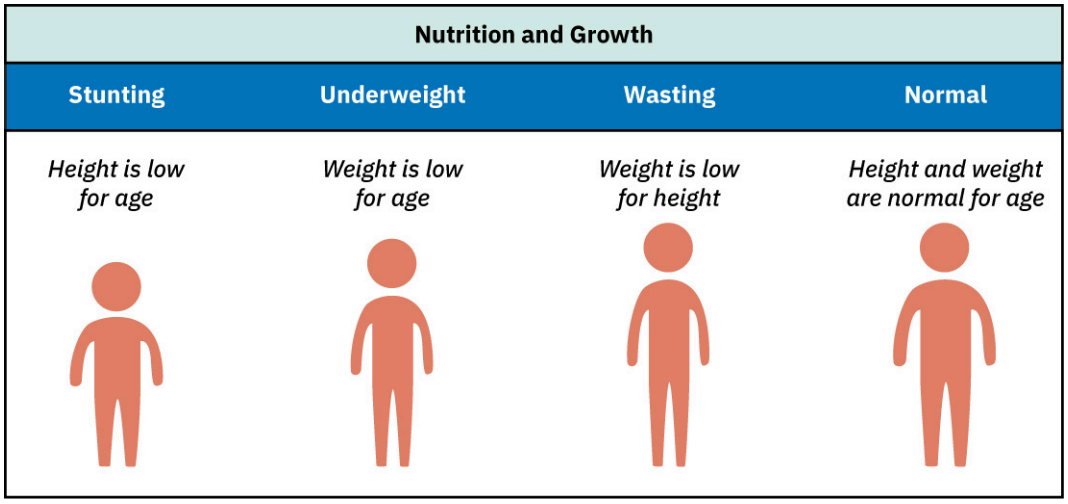


FIGURE 5.3 Nutrition plays a significant role in stature and overall physical growth. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In contrast, when children receive sufficient nutrition, height differences are largely dictated by genetic and ethnicity factors. For example, genetic contributions to height are similar across geographic regions, and children descended from the geographic-cultural region of Europe tend to be taller than children descended from the geographic-cultural region of East Asia, regardless of where they live today, illustrating the strong influence of genetics and ethnicity (Jelenkovic et al., 2016).[1] Additionally, socioeconomic factors play a role in determining differences in height and weight. Children in high-income countries who receive better nutrition and health care grow taller and weigh more than their peers in low- and middle-income countries (Reynolds et al., 2017).

Sex Differences in Growth

During early childhood, boys start becoming taller and heavier on average than girls. Though still relatively minor, differences are more pronounced than in infancy and toddlerhood. For example, according to the World Health Organization (WHO), the average healthy four-year-old boy is about 0.75 inch (2 cm) taller and about 2 pounds (1 kg) heavier than the average healthy girl. At this age, girls are already developing more fatty tissue and boys have comparatively more muscle (McCarthy et al., 2014). This variation is partly due to differences in hormone production between the sexes and are probably genetically programmed.

Even in the first few months of life, male and female infants appear to store fat differently, perhaps due to different levels of hormone production (Davis et al., 2019). However, sex-related growth changes in early childhood may also be influenced by external factors like diet and exercise. Regardless of how they originate, these developmental differences become more apparent in large motor activities, which we'll discuss in 5.2 Motor Development and Physical Skills in Early Childhood. In early childhood, however, physical differences that may exist between boys and girls do not have any major practical applications.

In any case, the variance *within* each sex is much larger than that *between* the sexes. That is, height and weight vary widely among all boys and among all girls, but the average difference *between* boys and girls is very small. What are considered "normal" heights and weights for both boys and girls also varies. As always, group averages mask large individual differences, and individual variation is normal.

Neurodevelopmental Growth

The brain both orchestrates and complements the growth of the body. That is, neural growth allows the development and expansion of new competencies, and as experience and practice with competencies

1 This study (Jelenkovic et al., 2016) uses the terms "geographic-cultural regions" categorized as "Europe," "North America and Australia," and "East-Asia."

increase, the brain responds by growing new connections. This process occurs throughout the lifespan but is particularly pronounced in early childhood. By the age of six, a child's body weight is only about 30 percent of the average normal adult weight, but the brain has reached 90 percent of its adult size (Stiles & Jernigan, 2010) (Figure 5.4). The increased mass is accounted for by the growth of axons, dendrites, and synaptic connections that allow for more complex neural and motor processing. A more substantial proportion of the increased brain weight is attributable to increased myelination. This development allows for faster and more coordinated activity, as well as advances in learning and memory (Chevalier et al., 2015; Deoni et al., 2016; Gilmore et al., 2018).

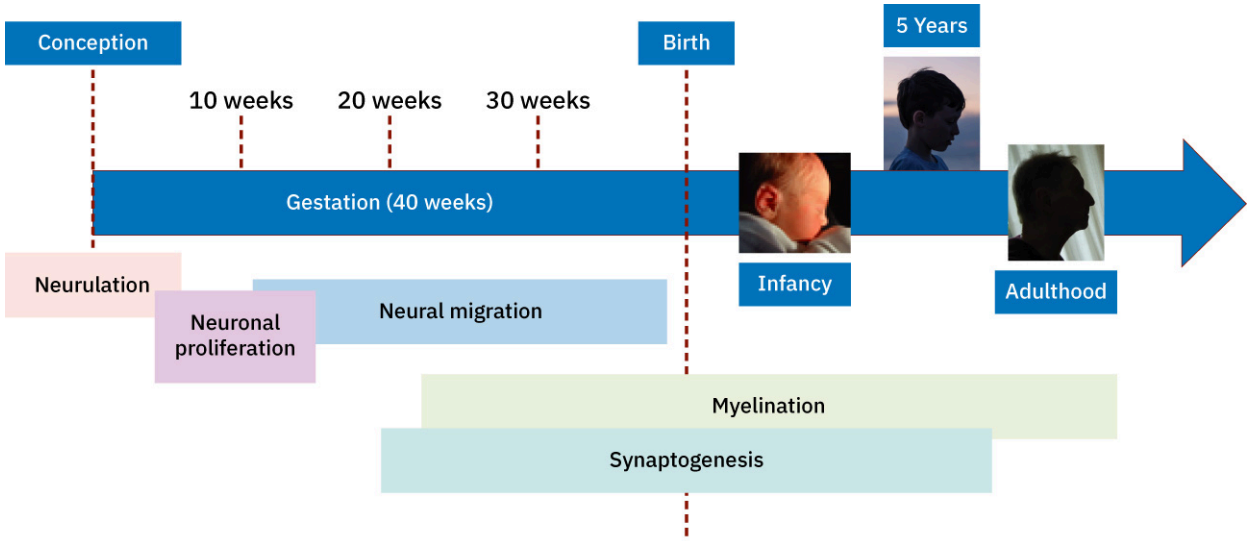


FIGURE 5.4 The brain grows significantly during early childhood, both in size and in its structures and connections. (credit "infancy": modification of work "2900 Photo of Neonate-02" by OpenStax Anatomy & Physiology/Wikimedia Commons, CC BY 4.0; credit "5 Years": modification of work "Walk By the Sea" by Patrick Metzdorf/Flickr, CC BY 2.0; credit "adulthood": modification of work "the optimist" by Erich Ferdinand/Flickr, CC BY 2.0; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

For the most part, maturation dictates the timing of myelination and brain development. Recall from 3.1 Physical Development in Infants and Toddlers that myelination is the process of wrapping axons in myelin to speed neural transmissions. The myelination of neurons that are essential to early physical development is mostly complete by 40 months of age. However, when life experiences are limited or the environment is highly stressful, myelination and overall brain growth will be slowed.

From an early age, the amount of stimulation a child receives has a significant effect on brain structure, weight, and volume (Gilmore et al., 2018; Lawson, 2013; Ziegler et al., 2020). Poor nutrition may also lead to deficits in myelin development and a general decrease in brain mass. However, the brain remains quite plastic in early childhood, and early intervention can often reverse these negative effects (de Faria et al., 2019).

The brain continues to overproduce dendrites and synapses, which then leads to additional synaptic pruning. This alone tells us that brain plasticity remains strong, and that experiences and opportunities have roles in development. A cross-sectional study with participants ranging in age from newborn to 91 years found that the density of dendrites among children in early childhood was two to three times that of the average adult (Petanjek et al., 2011). This indicates that a wealth of growth and learning are unfolding in early childhood, particularly for children in environments rich with learning and play experiences.

Growth patterns include *experience-expectant* processes, which are universal and occur in all individuals as part of typical development. They include the brain's being ready to receive and process sensory input, such as vision and language, during critical periods of development. In contrast, *experience-dependent* processes rely on the brain's ability to adapt and rewire in response to specific, individual experiences, such as learning a

new language or a musical instrument. These experiences are unique to each person and are influenced by the person's environment, learning opportunities, and social interactions. Thus, the brain appears programmed to expand.

The process of overproduction and pruning of synapses probably doesn't stop until the third decade of life, especially in the prefrontal cortex (Kolk & Rakic, 2022). That the brain continually reorganizes itself tells us that a person's environment has a persistent influence on outcomes. For instance, the onset of some neuropsychiatric disorders, like schizophrenia, may result from (still unidentified) environmental factors acting on genetic information.

Psychologists already know that environmental factors are associated with some areas of brain development. For instance, low socioeconomic status and poor nutrition are linked to less brain growth and less activation of specific brain regions. These findings likely have implications for school readiness, higher-order thinking, memory, and self-regulation (Hung et al., 2023; Moriguchi & Shinohara, 2019; Tomasi & Volkow, 2021). In another example, parents who respond with greater compassion and use fewer harsh tones exhibit the warmth and sensitivity associated with the development of more advanced brain networks in children (Suffren et al., 2022). It's also likely that overarching factors—like overall intellectual stimulation, reduced levels of stress, and better nutrition—account for a proportion of the differences in brain development (Copeland et al., 2021; Kopala-Sibley et al., 2020; Richmond et al., 2022).

Lateralization and Handedness

Most people process input from the right side of the body in the left hemisphere of their brain and vice versa. As you may recall from 3.1 Physical Development in Infants and Toddlers this organizational characteristic of the brain is known as lateralization. The left hemisphere typically handles language-related tasks such as reading, speaking, and thinking, while the right hemisphere specializes in emotional expression, musical ability, and recognition of visual-spatial relationships used in geometry, art, and navigation.

Lateralization begins at birth. The hemispheres are independent, and they work together to process experiences and respond. For example, oral communication, a function of the left hemisphere, also relies on right-hemisphere functions such as visualization. Therefore, there is no such thing as being "left-brained" or "right-brained."

Handedness is another example of lateralization in action. About 10 percent of children across cultures and continents prefer to use their left hand, a preference linked to differences in brain organization and genes. Whereas about 95 percent of right-handed people show typical lateralization patterns (like language centers in the left hemisphere), only about 75 percent of left-handers do (de Kovel et al., 2019). Though some studies indicate that most children develop an obvious hand preference by six months of age, others find that stable preferences may not appear until age nine or even later (Scharoun & Bryden, 2014). However, by that time, most children have already been required to favor one hand over another in school tasks like coloring, writing, and using a mouse.

Differences in cognition, artistic expression, and athletic prowess between left-handed and right-handed children are often reported. However, no scientific evidence suggests that these differences exist (McManus, 2019). Nonetheless, children who are left-hand dominant often struggle with products designed for right-handers, such as scissors, seat belts, and school desks. Though we can learn to use our non-dominant hand quite well, hand dominance appears to be highly heritable and unchangeable. Even identical twins, who share the same genes, may favor different hands; each has the same 10 percent chance of being left-handed. This indicates that handedness results from a combination of environmental and genetic influences (Schmitz et al., 2017).

Nutrition and Eating Habits

Nutritional needs are relatively stable from early childhood until puberty (Savarino et al., 2021). All children

need a balanced diet (Figure 5.5). This includes nutrient-rich foods containing a variety of the carbohydrates, proteins, and fats needed for energy and optimal health.

FIGURE 5.5 A balanced diet includes nutrient-rich foods that contain a variety of carbohydrates, proteins, and fats representing. (credit "Soy-whey-protein-diet" by Peggy Greb, USDA ARS/Wikimedia Commons, Public)

Macronutrients

The body requires carbohydrates, proteins, and fats in large amounts. These groupings are commonly known as **macronutrients**. They play a vital role in the growth and development of preschool children.

Carbohydrates are the body's primary source of energy. Preschool children need them to fuel their high level of activity and support their growing brains, and those who do not get enough may feel tired and weak. Good sources of carbohydrates include fresh fruits, vegetables, and whole grains. These foods also provide the fiber, vitamins, and minerals essential to maintain health.

Proteins are important for building and repairing tissues in the body. Preschool children need proteins for growth and development, and for maintaining a healthy immune system. Without sufficient protein, children are at higher risk for infections (Fan et al., 2022). Good sources of animal-based proteins include lean meats, fish, eggs, and dairy products such as cheese and yogurt. There are many good plant-based protein sources as well, like soy (for example, tofu), legumes like peas and beans, and nuts.

Fats are another important macronutrient preschool children need to maintain energy and growth, and to better absorb vitamins and minerals. Low intake of healthy fats can affect brain development and is associated with behavioral and learning problems (Chianese et al., 2018). Sources of healthy fats include nuts, seeds, avocados, and fatty fish like salmon. On the other hand, it's important to limit *saturated* fat intake. Saturated fats are found in animal meat products and rich dairy, including butter, cream, and many cheeses.

Stricter government regulations have reduced the number of food items with *trans* fats, but these substances are still common in processed snacks like crackers and cookies, frozen desserts, and fried foods of all kinds. Trans fats and saturated fats are associated with an increased lifetime risk of heart disease and other health problems (Houston, 2018; Pipoyan et al., 2021).

Healthy Habits

Parents and caregivers often worry about *how much* their children are eating rather than considering *what* they are eating. Children are quite good at regulating their own nutritional habits if given a chance. Serving less nutritious food (like the children's meals at many restaurants) because it is easier to get children to eat them generally leads to poor habits. Children who consume a lot of high-fat, sweet, and salty foods may fail to acquire a taste for other flavors. In contrast, adults who model positive eating habits, gently encourage children to try new foods, and avoid arguments over meals have a positive impact on children's eating behavior (Figure 5.6). In short, children who are introduced to healthy vegetables and proteins on a regular

basis will grow accustomed to them (Cardona Cano et al., 2015; Mahmood et al., 2021; Mazza et al., 2022; Nekitsing et al., 2018).

FIGURE 5.6 When a variety of healthy foods is available, children are more likely to enjoy these options as much as their parents and caregivers do. (credit: modification of work "Family eating a meal (2)" by Rhoda Baer, National Cancer Institute (NCI)/Wikimedia Commons, Public Domain)

LIFE HACKS

Preschool Dinnertime

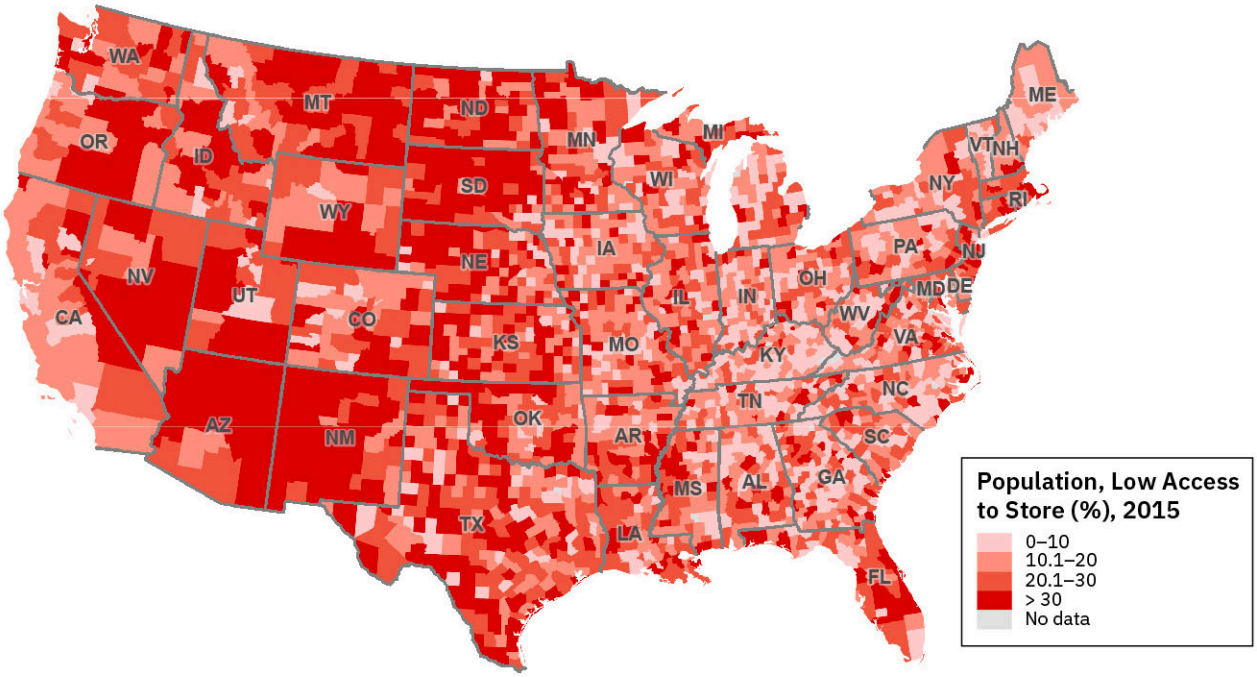
We want children to be healthy and to develop good eating habits. Yet many parents and caregivers insist that children "finish what's on their plate" before leaving the table or having dessert. This message supports the idea that children shouldn't listen to their own bodies when they are full, and that they should necessarily overeat. If children decide they're no longer hungry or don't want a particular item (that they usually didn't choose anyway), that is normally okay. Children are quite good at regulating their own eating habits if offered healthy choices and allowed to consume the amount that feels right to them.

Dinnertime is a perfect opportunity to provide a variety of healthy options and allow children to choose the right amount to eat. Many caregivers become anxious that children will "starve" if they don't immediately begin to eat what is served. Instead, adults should be patient and calm to avoid making meals into a power struggle. Consider these tips:

- Don't get frustrated. If children elect not to try the lentils or cantaloupe one night, it doesn't mean they'll never enjoy them.
- Avoid providing alternatives like pizza and fried chicken. These are fine to consume in moderation, but they reinforce picky eating when they become a frequent substitute for less-processed options.
- Speak in a matter-of fact tone: "That's fine; if you don't want the green beans tonight, you can eat more carrots instead."
- Enjoy your own healthy meals! If children observe others taking pleasure in a variety of foods, they'll eventually try other options themselves, especially if they aren't offered less-healthy alternatives.
- Be aware of food allergies or intolerances. If a particular food like dairy products or nuts consistently causes distress, it might indicate a health issue that is best addressed with a physician.

A significant proportion of U.S. children and families live in a **food desert**, a geographic area where fresh food

is not readily available (Figure 5.7). These usually lower-income, inner-city or rural areas spark a dependence on unhealthy fast food or frozen prepared food. Residents may therefore rely on the limited offerings of nearby convenience stores or travel long distances for their meals, which can be costly and incur further financial strain. Limited access to affordable and nutritious food can lead to a variety of health problems, including obesity, diabetes, and heart disease (Ziso et al., 2022).



Source: USDA Economic Research Service. U.S. Department of Agriculture.

FIGURE 5.7 This 2015 map shows the location of food deserts in the United States. The colors indicate the percentage of the population in the area with low access to or proximity to grocery stores. (credit: modification of work "Population, Low Access to Store (%), 2015" by USDA Economic Research Service, U.S. Department of Agriculture/ERS, Public Domain)

Efforts to increase access to healthy foods include tax incentives to build supermarkets, host farmer's markets, and develop community gardens in underserved areas. Addressing food deserts is an important step in promoting food equity and improving public health outcomes, particularly for vulnerable populations like those who are impoverished or have food allergies that further restrict food choices.

Healthy Sleep

Early childhood is a critical time to establish healthy sleep habits. Young children need a significant amount of sleep, as well as caring adults to support them with sleep issues (Figure 5.8).

FIGURE 5.8 Adhering to a nighttime routine helps children establish healthy sleep habits. For example, children might get a bath, enjoy a bedtime story with a trusted adult, listen to quiet music, and fall asleep. (credit: modification of work "2016-02-08 08.54.29 1" by Wutthichai Charoenburi/Flickr, CC BY 2.0)

Sleep Duration

According to the WHO, preschool children typically need ten to thirteen hours of sleep every twenty-four hours and to maintain consistent sleep and wake times. Children who have stopped napping sleep more at night, getting the same amount of sleep overall as their peers who nap (Ward et al., 2008; WHO, 2019).

Though evidence is limited, studies indicate that getting fewer than ten hours of sleep per night during early childhood is associated with a higher risk of accidents and hypertension, and a lower quality of life later. However, it's difficult to know whether those associations are due to poor sleep habits or to family and environmental variables, like a household that is less consistent about children's sleep habits, nutrition, and activity levels. A combination of factors may be responsible for poorer outcomes among children who sleep less than ten hours per night (Paruthi et al., 2016; Spruyt, 2019). Substantial evidence associates less-than-optimal sleep with unhealthy weight gain and obesity. These outcomes are likely due to changes in appetite, including excessive snacking and increased calorie consumption, and the way the body metabolizes energy (Papatriantafyllou et al., 2022).

Sleep Problems

Sleep problems are not uncommon in young children and can manifest in many ways. Fear of the dark and of being left alone can make it difficult to fall asleep or cause children to wake during the night. Parenting blogs and social media sites commonly report that up to half of children aged three to six have bad dreams at least once per week, but the prevalence is probably much lower, perhaps as low as 13 percent (Simard et al., 2008).

Between 1 percent and 6.5 percent of children experience **night terrors** (or sleep terrors), which appear to peak between ages five and seven. Unlike dreams, which occur during REM sleep, night terrors occur during deep sleep and initiate intense fear or terror. Children may suddenly sit up, scream and thrash, and appear to be in a state of panic or terror, sweating and having a rapid heart rate. In this state, they aren't fully awake and aren't easily comforted. They may not even respond to their parents or caregivers (Leung et al., 2020).

While the exact cause of night terrors is unknown, treatment usually consists of reassuring the child and keeping them safe during an episode. Children should not be forced to wake up. However, it is often effective to briefly wake them thirty minutes before the time terrors usually begin, typically during the first third of the night, and determine whether that intervention makes a difference. Medication and other treatments are not generally indicated, and most children grow out of night terrors by early adolescence (Leung et al., 2020; Van Horn & Street, 2022). Most also have no memory of the night terror when they awake.

Early Childhood Health Risks and Protective Factors

In addition to sufficient sleep and proper nutrition, young children need regular medical check-ups and vaccinations. Regular check-ups help ensure that children are growing and developing properly and can screen for early health problems. Children also need adults to provide safe environments.

Vaccination

The use of childhood vaccines in countries with high rates of national immunization coverage is responsible for the near-elimination of serious diseases such as polio and measles. Because there are no cures for these ailments, vaccinations are the best defense against severe illness and mortality (Figure 5.9).

FIGURE 5.9 Adhering to recommended vaccination schedules provides an easy way of improving children's overall health outcomes. (credit: "First under 5 COVID vaccine at NHC Pax River 22-0001-480 (7334629)" by Navy Medicine/Flickr, Public Domain)

Vaccines commonly administered in the United States protect against measles, mumps, rubella, hepatitis B, polio, diphtheria, tetanus, and pertussis (whooping cough). Although children continue to get vaccines until their second birthday, after which they receive mostly booster shots, there is no evidence they overburden the immune system (Glanz et al., 2018; Gregson & Edelman, 2003; Nicoli & Appay, 2017), as some people fear. Many public schools require vaccinations for entry, and the CDC and other health organizations provide recommended vaccination schedules as well as catch-up schedules if a child has fallen behind or otherwise needs an alternative schedule.

Another unfounded concern, that vaccinations are linked to the occurrence of developmental disorders, became popular in 1998, when British physician Andrew Wakefield and his colleagues published a now-retracted study in the scientific journal *The Lancet*. Without proper evidence, Wakefield suggested the MMR (measles, mumps, rubella) vaccine predisposed children to autism (as the disorder was then called) (Wakefield et al., 1998). The report received wide media attention despite its limitations, including having a sample size of only twelve, a poor design, and merely speculative conclusions. As a result, MMR vaccination rates declined significantly (Motta & Stecula, 2021; Rao & Andrade, 2011). The *British Medical Journal* later published a series of articles outlining fraudulent behavior among the research team and accusing Wakefield of knowingly publishing false information (Godlee et al., 2011; Kmietowicz, 2010). Wakefield was stripped of his medical license for misconduct, dishonesty, and unethical behavior. Nevertheless, his baseless influence affects vaccination rates decades later as widespread distrust of vaccines remains, despite their proven safety (Béres et al., 2023; Nuwarda et al., 2022).

Globally, immunization among children under five years old decreased from 86 percent in 2000 to 83 percent in 2023. Although the measles vaccine is widely available and inexpensive, limited distribution still exists in countries with low per-capita incomes or weak or disrupted health-care infrastructures; in 2022 136,000 deaths were attributed to measles, primarily among children under age five (WHO, 2024). Nevertheless, this vaccine has reduced the global death rate of measles by more than 83 percent since widespread use began (WHO, 2023). In the United States, the measles vaccine gained widespread distribution beginning in the 1960s, contributing to a decline in cases from about 750,000 a year to fewer than 200 annually by 2024 (CDC, 2024). Probably due to persistent misinformation, measles cases rose as high as 1,274 in 2019 before dropping again during the COVID-19 pandemic when children were isolated from one another. The WHO has recently rolled out its late-stage trial of a malaria vaccine (UNICEF, 2023) to combat one of the leading causes of childhood deaths globally.

Illness, Unintentional Injury, and Mortality

Globally, 15 percent of deaths among children under five are caused by diarrheal diseases. Unsanitary conditions and lack of access to safe drinking water are contributing factors. Often, simply drinking liquids to avoid dehydration will prevent death. However, of children who contract diarrheal diseases, fewer than half have access to clean drinking water (UNICEF, 2023). Along with diarrheal diseases, malnutrition and malaria remain leading causes of death in children under five, though they are virtually non-existent in wealthy countries. Many high-income countries have seen a strong decline in childhood death from diarrheal disease, largely thanks to better prevention science and rapid treatment (Santosham et al., 2019). In the United States, deaths from diarrheal diseases accounted for fewer than 0.1 percent of deaths in children younger than five (CDC, 2022).

After age one, unintentional injuries—accidents—become the leading cause of premature death in childhood. Despite continued improvements in safety standards for motor vehicles and consumer products, the overall decline in accidental deaths has stagnated. There are also persistent racial and ethnic differences in accident rates (CDC, 2022), almost certainly due to socioeconomic disparities between minorities and those who are more advantaged. Socioeconomic status (SES) plays a role in injuries related to fires, drownings, and falls, likely due to limited financial resources and education, less supervision, and lack of safe play areas. Low SES is also linked to higher rates of accidents and deaths related to burns, fires, drownings, and poisonings outside the United States (Mahboob et al., 2021; Moshiro et al., 2021; Tyler et al., 2017).

LINK TO LEARNING

The CDC compiles data on injuries (https://openstax.org/r/104CDCInjuries) across all age groups, as well as data on deaths (https://openstax.org/r/104CDCDeaths) across all age groups. Explore how different risk factors change by sex, race, and age.

The CDC also has differences in health among children visualization charts (https://openstax.org/r/104HealthDiff) for fatal injury data by sex, race, and age.

Ensuring safety and preventing homicides in both elementary and secondary schools has become an increasingly pressing matter in the United States. Homicide is currently one of the leading causes of death for children across age ranges—the fourth leading cause of death for children ages one to four, the fifth leading cause of death for children in elementary and middle school, and the third leading cause of death for high-school aged teens (National Center for Health Statistics, 2021). Between January 2009 and May 2018, there were 389 reported school shootings in the United States, compared to fewer than 40 in all other countries combined (CNN, 2018; Cox et al., 2024). Despite this alarming trend, there have been no widespread efforts to restrict the availability of firearms since the Columbine High School shooting in 1999. Many schools have implemented emergency plans and procedures for responding to threats, increased the use of physical barriers and security measures, and established partnerships with law enforcement and mental health

providers.

Dangers to children and adolescents in other parts of the world are very different. In some regions of Africa and Asia, such as Yemen and the Central African Republic, where political instability remains pervasive, military regimes abduct and enslave children for use in armed conflict (Human Rights Watch, 2023; United Nations [UN], 2023). In other countries, such as South Sudan and Afghanistan, both government and opposition forces use residential areas, schools, and students as shields, posing significant threats and making children prime targets of violence. Some progress in protecting children has been made by the UN's "Children, not Soldiers" campaign launched in 2014 (UN, 2023).

References

Béres, F., Michaletzky, T. V., Csoma, R., & Benczúr, A. A. (2023). Network embedding aided vaccine skepticism detection. *Applied Network Science*, *8*(1). https://doi.org/10.1007/s41109-023-00534-x

Bhutta, Z. A., Akseer, N., Keats, E. C., Vaivada, T., Baker, S., Horton, S. E., Katz, J., Menon, P., Piwoz, E., Shekar, M., Victora, C., & Black, R. (2020). How countries can reduce child stunting at scale: Lessons from exemplar countries. *American Journal of Clinical Nutrition, 112*(Suppl 2), 894S–904S. https://doi.org/10.1093/ajcn/nqaa153

Bogin, B. (2013). Secular changes in childhood, adolescent and adult stature. *Nestlé Nutrition Institute Workshop, 71*, 115–126. https://doi.org/10.1159/000342581

Cardona Cano, S., Tiemeier, H., Van Hoeken, D., Tharner, A., Jaddoe, V. W., Hofman, A., Verjulst, F. C., & Hoek, H. W. (2015). Trajectories of picky eating during childhood: A general population study. *International Journal of Eating Disorders, 48*, 570–579. https://doi.org/10.1002/eat.22384

Centers for Disease Control and Prevention. (2022). *Leading causes of death reports, 1981–2020*. https://wisqars.cdc.gov/fatal-leading

Centers for Disease Control and Prevention. (2023). *CDC growth charts*. https://www.cdc.gov/growthcharts/cdc-growth-charts.htm

Centers for Disease Control and Prevention. (2024, July 26). *Measles (rubeola). Measles cases and outbreaks*. https://www.cdc.gov/measles/data-research/?CDC_AAref_Val=https://www.cdc.gov/measles/cases-outbreaks.html

Chevalier, N., Kurth, S., Doucette, M. R., Wiseheart, M., L. Deoni, S. C., Blackwell, K. A., Munakata, Y., & LeBourgeois, M. K. (2015). Myelination is associated with processing speed in early childhood: Preliminary insights. *PloS ONE, 10*(10). https://doi.org/10.1371/journal.pone.0139897

Chianese, R., Coccurello, R., Viggiano, A., Scafuro, M., Fiore, M., Coppola, G., Operto, F. F., Fasano, S., Layé, S., Pierantoni, R., & Meccariello, R. (2018). Impact of dietary fats on brain functions. *Current Neuropharmacology, 16*(7), 1059–1085. https://doi.org/10.2174/1570159X15666171017102547

CNN. (2018, May 21). *The US has had 57 times as many school shootings as the other major industrialized nations combined*. https://www.cnn.com/2018/05/21/us/school-shooting-us-versus-world-trnd/index.html

Copeland, A., Korja, R., Nolvi, S., Rajasilta, O., Pulli, E. P., Kumpulainen, V., Silver, E., Saukko, E., Hakanen, H., Holmberg, E., Kataja, E. L., Häkkinen, S., Parkkola, R., Lähdesmäki, T., Karlsson, L., Karlsson, H., & Tuulari, J. J. (2021). Maternal sensitivity at the age of 8 months associates with local connectivity of the medial prefrontal cortex in children at 5 years of age. *Frontiers in Neuroscience, 16*. https://doi.org/10.3389/fnins.2022.920995

Cox, J. W., Rich, S., Trevor, L., Muyskens, J., & Ulmanu, M. (2024, July 1). *More than 370,000 students have experienced gun violence at school since Columbine*. The Washington Post. https://www.washingtonpost.com/education/interactive/school-shootings-database/

Davis, S. M., Kaar, J. L., Ringham, B. M., Hockett, C. W., Glueck, D. H., & Dabelea, D. (2019). Sex differences in infant body composition emerge in the first 5 months of life. *Journal of Pediatric Endocrinology & Metabolism*, *32*(11), 1235–1239. https://doi.org/10.1515/jpem-2019-0243

de Faria, O., Jr., Gonsalvez, D. G., Nicholson, M., & Xiao, J. (2019). Activity-dependent central nervous system myelination throughout life. *Journal of Neurochemistry, 148*(4), 447–461. https://doi.org/10.1111/jnc.14592

de Kovel, C. G. F., Carrión-Castillo, A., & Francks, C. (2019). A large-scale population study of early life factors influencing left-handedness. *Scientific Reports*, *9*, 584. https://doi.org/10.1038/s41598-018-37423-8

De Sanctis, V., Soliman, A., Alaaraj, N., Ahmed, S., Alyafei, F., & Hamed, N. (2021). Early and long-term consequences of nutritional stunting: From childhood to adulthood. *Acta Biomed, 92*(1). https://doi.org/10.23750/abm.v92i1.11346

Deoni, S. C. L., O'Muircheartaigh, J., Elison, J. T., Walker, L., Doernberg, E., Waskiewicz, N., Dirks, H., Piryatinsky, I., Dean, D. C. III, Jumbe, N. L. (2016). White matter maturation profiles through early childhood predict general cognitive ability. *Brain Structure and Function, 221*(2), 1189–1203. https://doi.org/10.1007/s00429-014-0947-x

Dirks, H., Piryatinsky, I., Dean III, D. C., & Jumbe, N. L. (2016). White matter maturation profiles through early childhood predict general cognitive ability. *Brain Structure & Function, 221*(2), 1189–1203. https://doi.org/10.1007/s00429-014-0947-x

Fan, Y., Yao, Q., Liu, Y., Jia, T., Zhang, J., & Jiang, E. (2022). Underlying causes and co-existence of malnutrition and infections: An exceedingly common death risk in cancer. *Frontiers in Nutrition, 9*. https://doi.org/10.3389/fnut.2022.814095

Gilmore, J. H., Knickmeyer, R. C., & Gao, W. (2018). Imaging structural and functional brain development in early childhood. *Nature Reviews Neuroscience, 19*(3), 123–137. https://doi.org/10.1038/nrn.2018.1

Glanz, J. M., Newcomer, S. R., Daley, M. F., DeStefano, F., Groom, H. C., Jackson, M. L., Lewin, B. J., McCarthy, N. L., McClure, D. L., Narwaney, K. J., Nordin, J. D., & Zerbo, O. (2018). Association between estimated cumulative vaccine antigen exposure through the first 23 months of life and non–vaccine-targeted infections from 24 through 47 months of age. *JAMA*, *319*(9), 906–913. https://doi.org/10.1001/jama.2018.0708

Godlee, F., Smith, J., & Marcovitch, H. (2011). Wakefield's article linking MMR vaccine and autism was fraudulent. *BMJ (Clinical research ed.), 342*, c7452. https://doi.org/10.1136/bmj.c7452

Gregson, A. L., & Edelman, R. (2003). Does antigenic overload exist? The role of multiple immunizations in infants. *Immunology and Allergy Clinics of North America, 23*(4), 649–664. https://doi.org/10.1016/S0889-8561(03)00097-3

Houston, M. (2018). The relationship of saturated fats and coronary heart disease: Fact or fiction? A commentary. *Therapeutic Advances in Cardiovascular Disease*, *12*(2), 33–37. https://doi.org/10.1177/1753944717742549

Human Rights Watch. (2023). *Children and armed conflict*. https://www.hrw.org/topic/childrens-rights/children-and-armed-conflict

Hung, I. T., Ganiban, J. M., & Saudino, K. J. (2023). Using the Flanker Task to examine genetic and environmental contributions in inhibitory control across the preschool period. *Behavior Genetics, 53*, 132–142. https://doi.org/10.1007/s10519-022-10129-4

Jelenkovic, A., Sund, R., Hur, M., Yokoyama, Y., Hjelmborg, B., Möller, S., Honda, C., . . . Silventoinen, K. (2016). Genetic and environmental influences on height from infancy to early adulthood: An individual-based pooled analysis of 45 twin cohorts. *Scientific Reports, 6: 28496*. https://doi.org/10.1038/srep28496

Kmietowicz, Z. (2010). Wakefield is struck off for the "serious and wide-ranging findings against him". *BMJ*, 340. https://doi.org/10.1136/bmj.c2803

Kolk, S. M., & Rakic, P. (2022). Development of prefrontal cortex. *Neuropsychopharmacology*, *47*(1), 41–57. https://doi.org/10.1038/s41386-021-01137-9

Kopala-Sibley, D. C., Cyr, M., Finsaas, M. C., Orawe, J., Huang, A., Tottenham, N., & Klein, D. N. (2018). Early childhood parenting predicts late childhood brain functional connectivity during emotion perception and reward processing. *Child Development*, *91*(1), 110–128. https://doi.org/10.1111/cdev.13126

Lang, J., McKie, J., Smith, H., McLaughlin, A., Gillberg, C., Shiels, P. G., & Minnis, H. (2019). Adverse childhood experiences, epigenetics and telomere length variation in childhood and beyond: A systematic review of the literature. *European Child & Adolescent Psychiatry*, *29*(10), 1329–1338. https://doi.org/10.1007/s00787-019-01329-1

Lawson, G. M., Duda, J. T., Avants, B. B., Wu, J., & Farah, M. J. (2013). Associations between children's socioeconomic status and prefrontal cortical thickness. *Developmental Science, 16*(5), 641–652. https://doi.org/10.1111/desc.12096

Leung, K. C., Leung, A. M., Wong, H. C., & Hon, K. L. (2020). Sleep terrors: An updated review. *Current Pediatric Reviews*, *16*(3), 176–182. https://doi.org/10.2174/1573396315666191014152136

Mahboob, A., Richmond, S. A., Harkins, J. P., & Macpherson, A. K. (2021). Childhood unintentional injury: The impact of family income, education level, occupation status, and other measures of socioeconomic status. A systematic review. *Paediatrics & Child Health*, *26*(1), e39–e45. https://doi.org/10.1093/pch/pxz145

Mahmood, L., Flores-Barrantes, P., Moreno, L. A., Manios, Y., & Gonzalez-Gil, E. M. (2021). The influence of parental dietary behaviors and practices on children's eating habits. *Nutrients*, *13*(4), 1138. https://doi.org/10.3390/nu13041138

Mazza, M., Morseth, M., & Torheim, L. E. (2022). Association between parental feeding practices and children's dietary intake: A cross-sectional study in the Gardermoen Region, National Center for Health Statistics. (2021). Health, United States, 2020–2021. Table LCODAge. Leading causes of death and number of deaths, by age: United States, 1980 and 2019. Hyattsville, MD. https://www.cdc.gov/nchs/hus/data-finder.htm.

Norway. *Food & Nutrition Research, 66*. https://doi.org/10.29219/fnr.v66.8050

McCarthy, H. D., Samani-Radia, D., Jebb, S.A., & Prentice, A. M. (2014). Skeletal muscle mass reference curves for children and adolescents. *Pediatric Obesity, 9*(4),

249–259. https://doi.org/10.1111/j.2047-6310.2013.00168.x
McManus, C. (2019). Half a century of handedness research: Myths, truths; fictions, facts; backwards, but mostly forwards. *Brain and Neuroscience Advances*, *3*. https://doi.org/10.1177/2398212818820513.
MedlinePlus. (2022, October 31). *Preschooler development*. National Library of Medicine. https://medlineplus.gov/ency/article/002013.htm
Moriguchi, Y., & Shinohara, I. (2019). Socioeconomic disparity in prefrontal development during early childhood. *Scientific Reports, (9)*2585. https://doi.org/10.1038/s41598-019-39255-6
Moshiro, R., Furia, F. F., Massawe, A., & Mmbaga, E. J. (2021). Pattern and risk factors for childhood injuries in Dar es Salaam, Tanzania. *African Health Sciences, 21*(2), 817–825. https://doi.org/10.4314/ahs.v21i2.42
Motta, M., & Stecula, D. (2021). Quantifying the effect of Wakefield et al. (1998) on skepticism about MMR vaccine safety in the U.S. *PLoS ONE, 16*(8), Article e0256395. https://doi.org/10.1371/journal.pone.0256395
Nekitsing, C., Hetherington, M. M., & Blundell-Birtill, P. (2018). Developing healthy food preferences in preschool children through taste exposure, sensory learning, and nutrition education. *Current Obesity Reports, 7*(1), 60–67. https://doi.org/10.1007/s13679-018-0297-8
Nicoli, F., & Appay, V. (2017). Immunological considerations regarding parental concerns on pediatric immunizations. *Vaccine, 35*(23), 3012–3019. https://doi.org/10.1016/j.vaccine.2017.04.030
Nuwarda, R. F., Ramzan, I., Weekes, L., & Kayser, V. (2022). Vaccine hesitancy: Contemporary issues and historical background. *Vaccines*, *10*(10), 1595. https://doi.org/10.3390/vaccines10101595
Papatriantafyllou, E., Efthymiou, D., Zoumbaneas, E., Popescu, C. A., & Vassilopoulou, E. (2022). Sleep deprivation: Effects on weight loss and weight loss maintenance. *Nutrients*, *14*(8), 1549. https://doi.org/10.3390/nu14081549
Paruthi, S., Brooks, L. J., D'Ambrosio, C., Hall, W. A., Kotagal, S., Lloyd, R. M., Malow, B. A., Maski, K., Nichols, C., Quan, S. F., Rosen, C. L., Troester, M. M., & Wise, M. S. (2016). Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: Methodology and discussion. *Journal of Clinical Sleep Medicine*, *12*(11), 1549–1561. https://doi.org/10.5664/jcsm.6288
Petanjek, Z., Judaš, M., Šimić, G., Rašin, M. R., Uylings, H. B., Rakic, P., & Kostović, I. (2011). Extraordinary neoteny of synaptic spines in the human prefrontal cortex. *Proceedings of the National Academy of Sciences, 108*(32), 13281–13286. https://doi.org/10.1073/pnas.1105108108
Pipoyan, D., Stepanyan, S., Stepanyan, S., Beglaryan, M., Costantini, L., Molinari, R., & Merendino, N. (2021). The effect of trans fatty acids on human health: Regulation and consumption patterns. *Foods, 10*(10), 2453. https://doi.org/10.3390/foods10102452
Rao, T. S., & Andrade, C. (2011). The MMR vaccine and autism: Sensation, refutation, retraction, and fraud. *Indian Journal of Psychiatry*, *53*(2), 95–96. https://doi.org/10.4103/0019-5545.82529
Reynolds, S. A., Andersen, C., Behrman, J., Singh, A., Stein, A. D., Benny, L., Crookston, B. T., Cueto, S., Dearden, K., Georgiadis, A., Krutikova, S., & Fernald, L. (2017). Disparities in children's vocabulary and height in relation to household wealth and parental schooling: A longitudinal study in four low- and middle-income countries. *SSM - Population Health*, *3*, 767–786. https://doi.org/10.1016/j.ssmph.2017.08.008
Richmond, S., Beare, R., Johnson, K. A., Bray, K., Pozzi, E., Allen, N. B., Seal, M. L., & Whittle, S. (2022). Maternal warmth is associated with network segregation across late childhood: A longitudinal neuroimaging study. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.917189
Santosham, M., Duggan, C. P., & Glass, R. (2019). Elimination of diarrheal mortality in children – the last half million. *Journal of Global Health, 9*(2). https://doi.org/10.7189/jogh.09.020102
Savarino, G., Corsello, A., & Corsello, G. (2021). Macronutrient balance and micronutrient amounts through growth and development. *Italian Journal of Pediatrics, 47*(1), Article 109. https://doi.org/10.1186/s13052-021-01061-0
Scharoun, S. M., & Bryden, P. J. (2014). Hand preference, performance abilities, and hand selection in children. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.00082
Schmitz, J., Metz, G., Güntürkün, O., & Ocklenburg, S. (2017). Beyond the genome—Towards an epigenetic understanding of handedness ontogenesis. *Progress in Neurobiology, 159*, 69–89. https://doi.org/10.1016/j.pneurobio.2017.10.005
Simard, V., Nielsen, T. A., Tremblay, R. E., Boivin, M., & Montplaisir, J. Y. (2008). Longitudinal study of bad dreams in preschool-aged children: Prevalence, demographic correlates, risk and protective factors. *Sleep, 31*(1), 62–70. https://doi.org/10.1093/sleep/31.1.62
Simeone, P., & Alberti, S. (2014). Epigenetic heredity of human height. *Physiological Reports, 2*(6), Article e12047. https://doi.org/10.14814/phy2.12047
Spruyt, K. (2019). A review of developmental consequences of poor sleep in childhood. *Sleep Medicine*, *60*, 3–12. https://doi.org/10.1016/j.sleep.2018.11.021
Stiles, J., & Jernigan, T. L. (2010). The basics of brain development. *Neuropsychology Review, 20*(4), 327–348. https://doi.org/10.1007/s11065-010-9148-4
Suffren, S., La Buissonnière-Ariza, V., Tucholka, A., Nassim, M., Séguin, J. R., Boivin, M., Singh, M. K., Foland-Ross, L. C., Lepore, F., Gotlib, I. H.,Tremblay, R.E., & Maheu, F. S. (2022). Prefrontal cortex and amygdala anatomy in youth with persistent levels of harsh parenting practices and subclinical anxiety symptoms over time during childhood. *Development and Psychopathology, 34*(3), 957–968. https://doi.org/10.1017/S0954579420001716
Tomasi, D., & Volkow, N. D. (2021). Associations of family income with cognition and brain structure in USA children: Prevention implications. *Molecular Psychiatry, 26*, 6619–6629. https://doi.org/10.1038/s41380-021-01130-0
Tyler, M. D., Richards, D. B., Reske-Nielsen, C., Saghafi, O., Morse, E. A., Carey, R., & Jacquet, G. A. (2017). The epidemiology of drowning in low- and middle-income countries: A systematic review. *BMC Public Health, 17*, Article 413. https://doi.org/10.1186/s12889-017-4239-2
UNICEF/World Health Organization/World Bank Group. (2021). *Joint malnutrition estimates*. https://www.who.int/data/gho/data/themes/topics/joint-child-malnutrition-estimates-unicef-who-wb
United Nations. (2023). *Children and armed conflict*. https://childrenandarmedconflict.un.org/
UNICEF. (2023). *Levels and trends in child mortality*. United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME). https://data.unicef.org/resources/levels-and-trends-in-child-mortality/
U.S. Department of Agriculture. (2009, June). *Access to affordable and nutritious foods: Measuring and understanding food deserts and their consequences*. https://www.ers.usda.gov/webdocs/publications/42711/12716_ap036_1_.pdf
Van Horn, N. L., & Street, M. (2022). *Night terrors*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK493222/
Wakefield, A. J., Murch, S. H., Anthony, A., Linnell, J., Casson, D. M., Malik, M., Berelowitz, M., Dhillon, A. P., Thomson, M. A., Harvey, P., Valentine, A., Davies, S. E., & Walker-Smith, J. A. (1998). Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *The Lancet*, *351*(9103), 637–641. https://doi.org/10.1016/S0140-6736(97)11096-0 (Retraction published 2010, *The Lancet, 375*(9713), 445. https://doi.org/10.1016/S0140-6736(10)60175-4)
Ward, T. M., Gay, C., Anders, T. F., Alkon, A., & Lee, K. A. (2008). Sleep and napping patterns in 3-to-5-year old children attending full-day childcare centers. *Journal of Pediatric Psychology, 33*(6), 666–672. https://doi.org/10.1093/jpepsy/jsm102
World Health Organization. (2019). *Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age*. https://apps.who.int/iris/handle/10665/311664
World Health Organization (2024, July 12). *Measles*. https://www.who.int/news-room/fact-sheets/detail/measles.
Ziegler, G., Moutoussis, M., Hauser, T. U., Fearon, P., Bullmore, E. T., Goodyer, I. M., Fonagy, P., Jones, P. B., Lindenberger, U., & Dolan, R. J. (2020). Childhood socio-economic disadvantage predicts reduced myelin growth across adolescence and young adulthood. *Human Brain Mapping*, *41*(12), 3392–3402. https://doi.org/10.1002/hbm.25024
Ziso, D., Chun, O. K., & Puglisi, M. J. (2022). Increasing access to healthy foods through improving food environment: A review of mixed methods intervention studies with residents of low-income communities. *Nutrients, 14*(11), 2278. https://doi.org/10.3390/nu14112278

5.2 Motor Development and Physical Skills in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify milestones in movement and activity during early childhood
- Distinguish between gross and fine motor skills
- Explain the connection between movement and healthy overall development
- Identify variables that may affect development of motor behavior in early childhood

Every place is Soo Min's potential playground. She uses sofas and pillows to build caves, imagines being a wild bear, and launches toys into space. She is drawn to movement, spending her days running, jumping, climbing,

clapping, twisting, and spinning. She plays with balls and has spontaneous dance parties. And it's not a coincidence that many of her favorite preschool songs celebrate and encourage movement, including "The Wheels on the Bus," "The Itsy-Bitsy Spider," and "The Hokey Pokey," to name a few.

In this section, you'll learn about norms for motor development as well as individual differences in movement during early childhood. Psychologists study this period by dividing motor activity into large and small body movements—gross and fine motor skills. As you learned in 5.1 Physical Health and Growth in Early Childhood, environmental experiences and brain growth are complementary influences. Activities that initiate myelin formation, and myelin formation itself, are reciprocal developments that both improve motor skills. Depending on whether there is freedom or restriction, experiences in movement can have a significant impact on a child's physical development (Özal et al., 2020).

Gross and Fine Motor Skills and Developmental Milestones

As children develop during early childhood, they become more proficient at running, catching and throwing a ball, using crayons, and manipulating devices like phones or computers with their hands and fingers. These activities are important milestones in motor (movement) development. Achieving physical milestones also means the brain is developing as predicted. When milestones are significantly delayed, it indicates a potential problem in development, and appropriate interventions can be designed to address it.

During this period, children transition from somewhat lumbering, awkward behaviors to more adult-like motor movement. Through early childhood they will meet common motor skill milestones that gradually improve their physical abilities, including their hand-eye coordination, reaction time, and overall strength (Table 5.1).

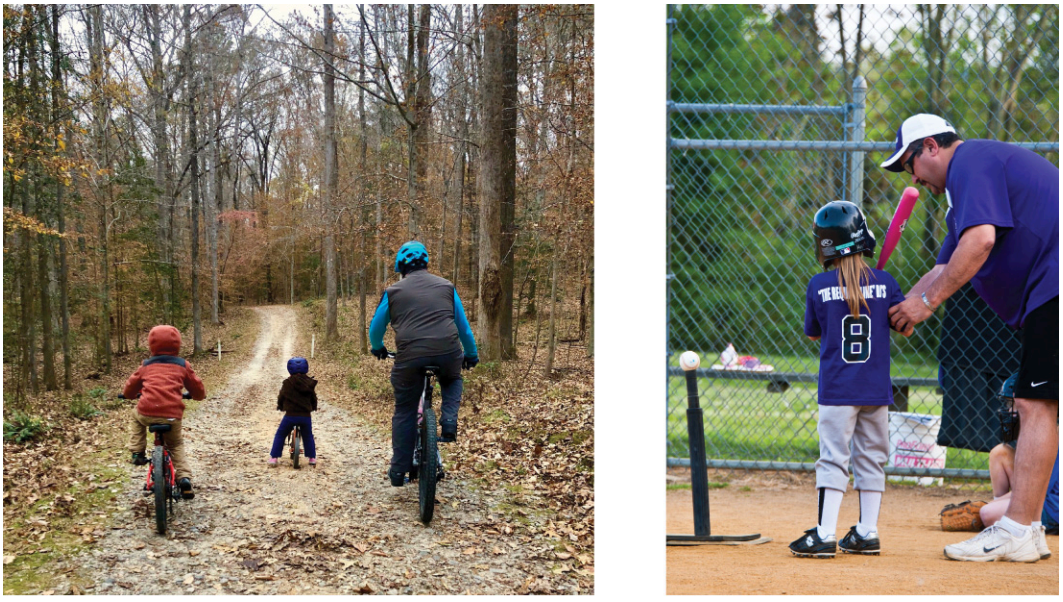
Typical Age of Appearance in Years	Common Gross Motor Milestones	Common Fine Motor Milestones
2–3	• Climbs • Ascends stairs (unaided) with alternating feet • Dresses self (without manipulating buttons or zippers) • Pours liquids into containers	• Uses utensils like forks or chopsticks • Drinks from cup without spilling • Uses door lever • Performs simple tasks on a tablet or keyboard
3–4	• Runs • Jumps with two feet together • Pedals a tricycle • Descends stairs (aided) with alternating feet • Throws and catches a ball • Uses toilet independently	• Turns one page at a time in a book • Buttons and unbuttons clothing • Strings beads • Stacks six or more blocks to build a tower • Cuts and pastes • Draws a circle by copying • Constructs simple puzzles • Uses a mouse and keyboard

TABLE 5.1 Common Motor Skill Milestones in Early Childhood

Typical Age of Appearance in Years	Common Gross Motor Milestones	Common Fine Motor Milestones
4–5	• Stands on one foot • Catches a bounced ball most of the time • Walks across a balance beam • Hops on one foot	• Uses a TV remote • Uses scissors • Draws a person with two to four body parts • Writes letters and draws shapes • Ties shoes
5–6	• Skips • Does a somersault • Swings under own power • Jumps rope	• Draws a person with at least six body parts • Writes name and numbers accurately • Draws basic shapes • Connects buttons, zippers, snaps • Uses school supplies appropriately

TABLE 5.1 Common Motor Skill Milestones in Early Childhood

By the time children arrive at middle childhood, they will have developed the general capabilities to perform movements like those of adults—though with far less skill and strength (Figure 5.10). However, due to their relatively immature cognitive abilities and still-developing brains, children don't yet fully grasp certain aspects of motion, such as the trajectory of a rolling ball in a game of soccer or kickball. For these reasons, younger children are usually offered accommodations when engaging in physical activities. For instance, their slower reaction time and lack of skill necessitates the use of equipment like training wheels on a bicycle or a batting tee in T-ball.



(a) (b)

FIGURE 5.10 By the end of the early childhood period, children can perform most of the same physical tasks as adults, such as (a) riding a bike or (b) hitting a baseball, though with less skill. (credit a: modification of work "PO

Family Bike Ride" by Virginia State Parks/Flickr, CC BY 2.0; credit b: modification of work "T Ball" by Jim Pennucci/Flickr, CC BY 2.0)

As you learned in 3.2 Motor Development in Infants and Toddlers, large body movements of the head, torso, arms, and legs are **gross motor skills**. We use gross motor skills in everyday activities like getting out of bed, stepping into clothes, and participating in nearly all athletic activities. In contrast, **fine motor skills** enable more precise movements of the hands and fingers. Among those who are sighted, fine motor skills often coordinate with vision. We use fine motor skills when clipping nails, holding a pencil to draw, using a video game controller, and holding an eating utensil. Similar to general physical growth, motor behavior changes depending on experience. For instance, having opportunities to play with blocks or participate in recreational sports provide advantages in particular kinds of movements.

Sometimes children struggle to perform typical movements, a condition called **dyspraxia** or developmental coordination disorder (O'Dea et al., 2021). This neurodevelopmental condition often emerges in early childhood and impairs a child's ability to plan and execute coordinated movements like tying shoelaces, buttoning clothes, or holding a pencil properly. Children with the disorder may also have difficulty with gross motor skills, such as riding a bike or dribbling a ball. Early intervention can help improve motor skills and boost a child's self-esteem and future development (Eggleston et al., 2020; Zwicker & Lee, 2021).

The Importance of Physicality and Movement

It's well-established that early physical activity has a positive impact on later health outcomes (Pate et al., 2019; Roychowdhury, 2020; Wyszyńska et al., 2020), including weight and cardiovascular fitness. It is also linked to lower risks of chronic diseases like diabetes, hypertension, and certain cancers. Moreover, children who engage in physical activity during early childhood have higher bone density, which may help prevent osteoporosis in later life (Pate et al., 2019).

Like their older counterparts, active children also have stronger cognitive development, including improved attention, self-regulation, and academic performance (Mualem et al., 2018; Wood et al., 2020). Substantial evidence shows that throughout the lifespan, regular physical activity leads to better overall cognitive development (Erickson et al., 2019). Even a single 30-minute session has been shown to be beneficial in improving motor activity and memory for preschool children (McDonnell et al., 2013). One recent study suggested that these improvements are traceable to the cellular level in the brain, finding sustained brain excitability after one 30-minute aerobic activity (Kuo et al., 2023). Physical activity also has positive influences on later mental health, with reduced levels of depression, anxiety, and stress reported in physically active children, including those with ADHD (Christiansen et al., 2019; Rodriguez-Ayllon et al., 2019).

The COVID-19 pandemic of 2020–2023 closed schools and community centers in many countries, depriving children of the benefits of physical activity due organized sports and recreation being restricted or unavailable. These limitations mirrored the challenges individuals already faced in low-income communities, where areas may be unsafe for families to walk or bicycle, and where access to amenities like affordable sports facilities and open spaces are typically scarce, perpetuating health and other inequalities. The pandemic underscored the significance of providing equal opportunities for children of all ages, genders, incomes, ethnicities, and physical abilities to engage in physical activity regularly (Do et al., 2022; Richard et al., 2023).

Movement Guidelines

According to the WHO, three- and four-year-old children should spend a minimum of three hours per day engaged in a variety of physical activities, including at least sixty minutes of moderate intensity to promote overall healthy development (WHO, 2022). Moderately intense activities include walking a dog, dancing, and riding a tricycle. In addition, the WHO recommends that children not be restrained in a stroller for more than an hour at a time or sit for extended periods (Figure 5.11).

FIGURE 5.11 Open spaces should be made safe and available so that all children can be active. (credit: modification of work "DSC04043" by Seattle Parks and Recreation/Flickr, CC BY 2.0)

Children who are five and six years old are typically in school. The WHO recommends that they participate in a minimum of sixty minutes of moderate-to-vigorous activity per day. This can include normal school recess activities like climbing and playing games with balls. At least three times per week, children this age should engage in more vigorous aerobic activity, like games of tag, soccer, or basketball. High-intensity physical activities are especially important for building bone strength and muscle development (Gunter et al., 2012; Specker et al., 2015).

All young children should also have limits on screentime and sedentary behavior. However, modeling good habits can be difficult for parents and caregivers, and limiting sedentary behavior can be particularly challenging in some daycare settings and low-income communities, where space to play may be less accessible.

Individual Differences in Motor Behavior

Children with physical disabilities need physical activity as much as their peers. However, unequal facilities, such as playgrounds lacking specialized equipment, can pose structural barriers for these children. In addition, some sex differences are present in motor development.

Children with Physical Disabilities

Public policy decisions typically give less consideration to preschool children with physical disabilities (Heath & Levine, 2022). Their caregivers must therefore become expert coaches and activists, adding to family stress (Delvert et al., 2022). Barriers can include facilities that are inaccessible to wheelchairs, climbing bars that are too high to reach, and a lack of adapted equipment. Attitudinal barriers such as negative stereotypes and misconceptions about children's capabilities are additional challenges, but it is essential to promote physical activity nevertheless (Figure 5.12). Children with different abilities or disabilities gain the same benefits from physical activity as other children, including improved cardiovascular health, strength, balance, coordination, and mood (Lasma & Rachman, 2019; Xu et al., 2020).

FIGURE 5.12 Being active benefits children with disabilities in the same way as it does other children, including improvements in cardiovascular health, strength, balance, coordination, and mood. (credit: modification of work "230708_ NVWG_Portland_1286" by U.S. Department of Veterans Affairs/Flickr, Public Domain)

Physical activity also improves social skills, self-esteem, and mental health for children with disabilities, often leading to higher educational achievement (Alhumaid & Said, 2023; Bloemen et al., 2015). Expanding teacher training to include appropriate special education activities is a good start. Simply increasing knowledge about various disabilities allows schools to promote equity, inclusivity, and diversity. Just as we acknowledge that some children can more easily sit for long periods, we need to recognize that some children need additional time for activity.

Sex Differences in Motor Behavior

Evidence suggests that physical differences exist between males and females even at early ages, due to physiological and maturational differences (Kokštejn et al., 2017; Pellegrini & Smith, 1998). Studies show that females' fine motor skills and manual dexterity are better than males', beginning at about two years of age. These advantages gradually diminish through the early childhood years until they disappear (Navarro-Patón et al., 2021). In contrast, boys tend to outperform girls in specific gross motor skills (like catching a ball) that require speed or object manipulation. On average, boys jump higher and run faster than girls beginning in early childhood, likely because of differences in muscle strength.

However, girls show better balancing skills on average, such as when walking on a beam, balancing on one foot, and playing hopscotch. Therefore, some research argues that when all large motor activities are considered, overall differences disappear (Kokštejn et al., 2017). However, it is not known how much time boys and girls spent on balancing activities before they were measured in these studies (Navarro-Patón et al., 2021; Peyre et al., 2019). Furthermore, differences that do exist appear to ebb and flow throughout the preschool period depending on exact age and sex. Because preschool children are so young, just a few months can have a large impact when measuring one group against another.

Biological evidence points to small differences between male and female infant brains that may influence motor behavior. For example, males have higher motor and physical activity levels than females (Eaton & Yu, 1989; Oller et al., 2020; Pellegrini & Smith, 1998; Raza et al., 2019, Worobey, 2014). These findings might explain differences in motor behavior. However, studies also show that male infants are conditioned to be more

physically active than female infants. On average, adults treat girls more delicately and use softer language beginning right after birth and continuing throughout infancy (Beal, 1994; Johnson et al., 2014). Parents are more likely to engage in rough-and-tumble play with boys, in contrast to quiet play activities such as reading and cuddling when engaging with girls (Storli, 2021). This behavior suggests boys are given more opportunity to develop motor skills. Therefore, differences between boys and girls may be due to learning and reinforcement. That is, perhaps boys are given more opportunities to practice motor skills, providing a foundation for added strength.

Finally, recall the distinction between within-group and between-group differences. Discovering the reasons behind small differences in motor abilities provides insight for developmental scientists. For example, it helps us to understand the full range of development and to design interventions when problems arise. Regardless of individual or group differences, all children should be offered equal opportunities and encouragement.

LIFE HACKS

Keeping Children Active

We know that during early childhood, parents and caregivers should encourage activities and play that emphasize motor skills and combat sedentary behavior and habits. After all, the brain *literally* grows when children engage in new opportunities. But if you're wondering when you'll find time in your day to play catch with your kids, consider that while children need to move, not all motor behaviors are related to athletic activities.

In fact, you can turn everyday "adult" tasks like shopping and cooking into engaging activities that encourage movement and promote skill-building and foster independence. Children enjoy placing produce in a bag, lifting sacks of flour, and loading and unloading items from a shopping cart. They also develop fine motor skills when they pour water, measure ingredients, and use utensils of all kinds. Including young children in these activities does take planning and patience. It's tempting to run to the grocery store while another adult minds the child, or to rush through meal preparation while the child is occupied with electronic devices. However, try including children in these tasks as much as possible. With time and practice, they will become increasingly proficient, improving their motor skills, building a habit of keeping active, learning responsibility, and perhaps eventually even saving you time. And one day, they may even cook dinner for the family.

References

Alhumaid, M. M., & Said, M. A. (2023). Increased physical activity, higher educational attainment, and the use of mobility aid are associated with self-esteem in people with physical disabilities. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1072709

Beal, C. R. (1994). *Boys and girls: The development of gender roles.* McGraw-Hill.

Bloemen,. M A., Backx, F. J., Takken, T., Wittink, H., Benner, J., Mollema, J., & de Groot, J. F. (2015). Factors associated with physical activity in children and adolescents with a physical disability: A systematic review. *Developmental Medicine & Child Neurology, 57*(2),137–148. https://doi.org/10.1111/dmcn.12624

Christiansen, L., Beck, M. M., Bilenberg, N., Wienecke, J., Astrup, A., & Lundbye-Jensen, J. (2019). Effects of exercise on cognitive performance in children and adolescents with ADHD: Potential mechanisms and evidence-based recommendations. *Journal of Clinical Medicine, 8*(6). https://doi.org/10.3390/jcm8060841

Delvert, J., Wikström, S., Bornehag, C-G., & Wadensjö, H. V. (2022). Struggling to enable physical activity for children with disabilities: A narrative model of parental roles, *Scandinavian Journal of Disability Research, 10*(24). https://doi.org/10.16993/sjdr.839

Do, B., Kirkland, C., Besenyi, G. M., Smock, C., & Lanza, K. (2022). Youth physical activity and the COVID-19 pandemic: A systematic review. *Preventive Medicine Reports, 29*. https://doi.org/10.1016/j.pmedr.2022.101959

Eaton, W. O., & Yu, A. P. (1989). Are sex differences in child motor activity level a function of sex differences in maturational status? *Child Development, 60*(4), 1005–1011. https://doi.org/10.2307/1131040

Eggleston, M., Watkins, W., Frampton, C., & Hanger, N. (2020). Coordination difficulties and self-esteem: The views of children, adolescents, and their parents. *Australian Occupational Therapy Journal, 67*(5), 437–446. https://doi.org/10.1111/1440-1630.12663

Erickson, K. I., Hillman, C., Stillman, C. M., Ballard, R. M., Bloodgood, B., Conroy, D. E., Macko, R., Marquez, D. X., Petruzzello, S. J., & Powell, K. E. (2019). Physical activity, cognition, and brain outcomes: A review of the 2018 physical activity guidelines. *Medicine and Science in Sports and Exercise, 51*(6), 1242. https://doi.org/10.1249/MSS.0000000000001936

Gunter, K. B., Almstedt, H. C., & Janz, K. F. (2012). Physical activity in childhood may be the key to optimizing lifespan skeletal health. *Exercise and Sport Sciences Reviews, 40*(1), 13. https://doi.org/10.1097/JES.0b013e318236e5ee

Heath, G. W., & Levine, D. (2022). Physical activity and public health among people with disabilities: Research gaps and recommendations. *International Journal of Environmental Research and Public Health, 19*(16), 10436. https://doi.org/10.3390/ijerph191610436

Johnson, K., Caskey, M., Rand, K., Tucker, R., & Vohr, B. (2014). Gender differences in adult-infant communication in the first months of life. *Pediatrics, 134*(6), 1603–1610. https://doi.org/10.1542/peds.2013-4289

Kokštejn, J., Musálek, M., & Tufano, J. J. (2017). Are sex differences in fundamental motor skills uniform throughout the entire preschool period? *PLoS ONE, 12*(4). https://doi.org/10.1371/journal.pone.0176556

Kuo, I., Hsieh, H., Lin, T., Kuo, F., & Nitsche, M. A. (2023). A single bout of aerobic exercise modulates motor learning performance and cortical excitability in humans. *International Journal of Clinical and Health Psychology, 23*(1). https://doi.org/10.1016/j.ijchp.2022.100333

Lasma, Y., & Rachman, F. (2019). Effects of rhythmic gymnastics exercise based on chair media to physical fitness of students. *Proceedings of the 2nd International Conference on Sports Sciences and Health 2018*. Advances in Health Science Research (AHSR), 7.

McDonnell, M. N., Buckley, J. D., Opie, G. M., Ridding, M. C., & Semmler, J. G. (2013). A single bout of aerobic exercise promotes motor cortical neuroplasticity. *Journal of Applied Physiology, 114*, 1174–1182. https://doi.org/10.1152/japplphysiol.01378.2012

Mualem, R., Leisman, G., Zbedat, Y., Ganem, S., Mualem, O., Amaria, M., Kozle, A., Khayat-Moughrabi, S., & Ornai, A. (2018). The effect of movement on cognitive

performance. *Frontiers in Public Health, 6*. https://doi.org/10.3389/fpubh.2018.00100
Navarro-Patón, R., Lago-Ballesteros, J., Arufe-Giráldez, V., Sanmiguel-Rodríguez, A., Lago-Fuentes, C., & Mecías-Calvo, M. (2021). Gender differences on motor competence in 5-year-old preschool children regarding relative age. *International Journal of Environmental Research and Public Health, 18*(6). https://doi.org/10.3390/ijerph18063143
O'Dea, A., Stanley, M., Coote, S., & Robinson, K. (2021). Children and young people's experiences of living with developmental coordination disorder/dyspraxia: A systematic review and meta-ethnography of qualitative research. *PLoS ONE, 16*(3), Article e0245738. https://doi.org/10.1371/journal.pone.0245738
Oller, D. K., Griebel, U., Bowman, D. D., Bene, E., Long, H. L., Yoo, H., & Ramsay, G. (2020). Infant boys are more vocal than infant girls. *Current Biology, 30*(10). https://doi.org/10.1016/j.cub.2020.03.049
Ozal, C., Bayoglu, B., Karahan, S., Kerem Günel, M., & Anlar, B. (2020). Gross motor development of preschool children: Effects of socioeconomic status and maternal education. *Turkish Journal of Pediatrics, 62*(1), 10–18. https://doi.org/10.24953/turkjped.2020.01.002
Pate, R. R., Hillman, C., Janz, K., Katzmarzyk, P. T., Powell, K. E., Torres, A., Whitt-Glover, M. C., & Guidelines Advisory Committee, P. A. (2019). Physical activity and health in children under 6 years of age: A systematic review. *Medicine and Science in Sports and Exercise, 51*(6). https://doi.org/10.1249/MSS.0000000000001940
Pellegrini, A. D., & Smith, P. K. (1998). Physical activity play: The nature and function of a neglected aspect of play. *Child Development, 69*(3), 577–598. https://doi.org/10.2307/1132187
Peyre, H., Hoertel, N., Bernard, J. Y., Rouffignac, C., Forhan, A., Taine, M., Heude, B., & Ramus, F.; EDEN Mother–Child Cohort Study Group. (2019). Sex differences in psychomotor development during the preschool period: A longitudinal study of the effects of environmental factors and of emotional, behavioral, and social functioning. *Journal of Experimental Child Psychology, 178*, 369–384. https://doi.org/10.1016/j.jecp.2018.09.002
Raza, H., Zhou, M., Todd, C., Christian, D., Marchant, E., Morgan, K., Khanom, A., Hill, R., Lyons, R. A., & Brophy, S. (2019). Predictors of objectively measured physical activity in 12-month-old infants: A study of linked birth cohort data with electronic health records. *Pediatric Obesity, 14*(7). https://doi.org/10.1111/ijpo.12512
Richard, V., Dumont, R., Lorthe, E., Loizeau, A., Baysson, H., Zaballa, E., Pennacchio, F., Barbe, R. P., Posfay-Barbe, K. M., Guessous, I., Stringhini, S., & Group, K. S. (2023). Impact of the COVID-19 pandemic on children and adolescents: Determinants and association with quality of life and mental health—A cross-sectional study. *Child and Adolescent Psychiatry and Mental Health, 17*. https://doi.org/10.1186/s13034-023-00563-5
Rodriguez-Ayllon, M., Cadenas-Sánchez, C., Estévez-López, F., Muñoz, N. E., Mora-Gonzalez, J., Migueles, J. H., Molina-García, P., Henriksson, H., Mena-Molina, A., Martínez-Vizcaíno, V., Catena, A., Löf, M., Erickson, K. I., Lubans, D. R., Ortega, F. B., & Esteban-Cornejo, I. (2019). Role of physical activity and sedentary behavior in the mental health of preschoolers, children, and adolescents: A systematic review and meta-analysis. *Sports Medicine, 49*(9), 1383–1410. https://doi.org/10.1007/s40279-019-01099-5
Roychowdhury, D. (2020). Using physical activity to enhance health outcomes across the life span. *Journal of Functional Morphology and Kinesiology, 5*(1). https://doi.org/10.3390/jfmk5010002
Specker, B., Thiex, N. W., & Sudhagoni, R. G. (2015). Does exercise influence pediatric bone? A systematic review. *Clinical Orthopaedics and Related Research, 473*(11), 3658–3672. https://doi.org/10.1007/s11999-015-4467-7
Storli, R. (2021). Children's rough-and-tumble play in a supportive early childhood education and care environment. *International Journal of Environmental Research and Public Health, 18*(19), Article 10469. https://doi.org/10.3390/ijerph181910469
Sutapa, P., Pratama, K. W., Rosly, M. M., Syed Ali, S. K., & Karakauki, M. (2021). Improving motor skills in early childhood through goal-oriented play activity. *Children, 8*(11), 994. https://doi.org/10.3390/children8110994
Wood, A. P., Nocera, V. G., Kybartas, T. J., & Coe, D. P. (2020). Physical activity and cognitive aspects of self-regulation in preschool-aged children: A systematic review. *International Journal of Environmental Research and Public Health, 17*(18), Article 6576. https://doi.org/10.3390/ijerph17186576
World Health Organization (2024, June 26). *Physical activity*. https://www.who.int/news-room/fact-sheets/detail/physical-activity
Worobey, J. (2014). Physical activity in infancy: Developmental aspects, measurement, and importance. *The American Journal of Clinical Nutrition, 99*(3), 729S–733S. https://doi.org/10.3945/ajcn.113.072397
Wyszyńska, J., Ring-Dimitriou, S., Thivel, D., Weghuber, D., Hadjipanayis, A., Grossman, Z., Ross-Russell, R., Dereń, K., & Mazur, A. (2020). Physical activity in the prevention of childhood obesity: The position of the European childhood obesity group and the European Academy of Pediatrics. *Frontiers of Pediatrics, 8*. https://doi.org/10.3389/fped.2020.535705
Xu, C., Yao, M., Kang, M., & Duan, G. (2020). Improving physical fitness of children with intellectual and developmental disabilities through an adapted rhythmic gymnastics program in China. *BioMed Research International, 2020*. https://doi.org/10.1155/2020/2345607
Zwicker, J. G., & Lee, E. J. (2021). Early intervention for children with/at risk of developmental coordination disorder: A scoping review. *Developmental Medicine & Child Neurology, 63*(6), 659-667. https://doi.org/10.1111/dmcn.14804

5.3 Cognition in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify typical cognitive milestones of early childhood
- Describe the major cognitive-developmental theories and perspectives relevant to early childhood
- Compare the major cognitive-developmental theories and perspectives of early childhood

Renae enjoys their work as a preschool teacher. Even on the rough days with tantrums, spilled paint, and bathroom accidents, Renae knows their day-to-day work allows them to witness something extraordinary. During early childhood, the students' brains will grow, facilitating an expansion of cognitive abilities. By the time these students transition to middle childhood and early elementary school, they'll be solving increasingly complex cognitive tasks, including jigsaw puzzles, math calculations, and negotiations to acquire a family pet.

In this section, you'll learn about the cognitive milestones expected in early childhood through the lens of various cognitive theories that have had a significant influence on how psychologists view this growth and development. Scientists, scholars, and practitioners use these theoretical lenses as a foundation to understand how children acquire natural skills like language, as well as those that are more culturally nuanced, like learning to be independent versus relying on the guidance of others.

Cognitive Influences and Milestones

The developmental patterns observed in young children can help us find new ways to improve cognition and choose early intervention strategies when we observe cognitive deficits. At three years of age, children exhibit a wide range of skill levels. Some speak little and their communication is relatively difficult to understand, whereas others articulate well enough to carry on long conversations with a stranger. Most children who are exposed to math concepts can do basic addition before they turn four, but others will not count to ten until well

after entering kindergarten at age five or six.

In addition, environmental and epigenetic factors can have a profound affect on the way each person develops. For instance, malnutrition during early childhood can lead to impaired neurodevelopment and cognition, which are associated with deficits in academic achievement (Kirolos et al., 2022). Even an influence that appears unrelated, like emotional deprivation, is associated with changes in the structure of the brain that may lead to impaired cognitive abilities (Sheridan et al., 2022).

When considering positive impacts on development, we know that simply talking more to infants and toddlers has a potentially profound influence on their later language use and cognition. In a study that continues to provoke discussion, Hart and Risley (1995) monitored and recorded the number of words that high-, middle-, and low-income parents used when interacting with their children over a two-year period. They found that, on average, high-income parents used twice as many words per hour as their low- and middle-income counterparts, resulting in their children hearing approximately 30 million more words by the age of four. This increase in exposure to language positively correlated with a significantly larger vocabulary in the children who heard more words.

Other research has questioned the methodology of Hart and Risley's original work and suggested that 30 million words might be an overestimate, finding instead that differences in language by SES may be less about a word gap and more about hearing child-directed speech (Dailey & Bergelson, 2021). Ultimately, parents' income shouldn't be considered the deciding factor. Rather, it seems that children with higher language skills have likely heard more words and been spoken to with child-directed speech more often. That is, language exposure, not income, is the strongest predictor of later language skills.

Research continues to show a positive association between home literacy and cognition across age, gender, and income (Hutton et al., 2020; Tompkins, 2022). These results reinforce that, though typical developmental milestones are a guide, they represent only one avenue of growth. And "typical" can have several meanings depending on the population considered. Just as a physical milestone like standing leads to walking, then running, then skipping, cognitive tasks show stepped gains in sophistication. Younger children begin counting, then perform addition, then understand more complex math operations. Caregivers and professionals use these types of milestones to ensure expected cognitive growth is occurring as expected (Table 5.2).

Age in Years	Typical Cognitive Capabilities
4	• Confidently knows their age, recites their first and last name, and describes who lives with them • Uses full sentences of at least five words and can be understood most of the time • Understands rudimentary number concepts and names colors and shapes • Can organize objects by size and shape • Copies letters and shapes • Follows a story and predicts what happens next • Demonstrates awareness of past and present
5	• Recites their address and caregivers' names and contact information • Tells linear stories using complete sentences • Counts to ten or more • Understands basic concepts of time • Recognizes and writes their own name • Recognizes letters of the alphabet • Describes events that happened to them in the past
6	• Relates people to others, such as "Dad's sister" • Speaks using correct grammar most of the time • Performs simple addition and subtraction • Understands simple jokes and has a sense of humor • Writes sentences, though spelling may be incorrect • Reads simple stories • Describes full episodes of entertainment programs

TABLE 5.2 Early Childhood Cognitive Milestones (source: Zubler et al., 2022)

Stage Theory of Cognitive Development

While it is important to identify typical cognitive milestones, if we want to help children develop, we also need to understand how they grow and achieve these milestones. As noted in 3.4 Cognition and Memory in Infants and Toddlers, Jean Piaget suggested that the maturation of thought and cognition is the result of an interaction between the developing brain and experiences in the world. Recall that children actively construct their understanding of the world throughout the childhood years via the processes of assimilation and accommodation. When information fits into existing schemas, it is assimilated; when a new way of thinking is necessary, the information is accommodated. These processes take on different forms as cognition matures.

The Preoperational Stage

During the earlier sensorimotor stage in Piaget's theory of cognitive development, infants shift focus from their own bodies to the world around them. Initially they lack internal representations of people, objects, or events, but by the end of this stage they have gained a range of skills in internal representation and the ability to act on those representations. These cognitive advancements mark the transition to Piaget's second stage of cognitive development, the **preoperational stage**, thought to occur from around age two to around age seven. It is called "pre" operational because it is characterized by lack of the logical and reversible mental actions known as operations. When we perform mental arithmetic, for example, we are performing an **operation** because we are using mental representations such as remembering, comparing, or evaluating. A post-

operational child older than seven can mentally imagine “three doubled” or how many players remain on a seven-person team if one leaves, and compare these to understand that both equal six.

Preoperational children show remarkable progress in mental representation, demonstrated by their ability to engage in imaginative play (Figure 5.13). They start to represent their thoughts and ideas using symbols, such as words and images. This is called **symbolic representation** and enables children to better understand the world around them. They playact, try different roles, and experiment with social interactions. They may use a crayon to represent a rocket blasting off or imagine a row of stuffed animals to be “students” in a pretend classroom. Thanks to rapid growth of language skills, they can represent images and actions that exist only in the imagination, like directing an ocean full of whales while sitting on a cardboard hovercraft. Through language and symbolic representation, children learn to *think* in more sophisticated ways. Piaget used specific terminology to mark these changes, including egocentrism and centration.

FIGURE 5.13 During the preoperational stage, children use their mental representation skills in imaginative play. (credit: modification of work “Child with drill toy” by Letta Page/Flickr, CC BY 2.0)

Egocentrism

According to Piaget, preoperational children have limited logical reasoning abilities because they tend to perceive things from only their current and individual perspective and experience. Thus, they find it challenging to differentiate their own thoughts and ideas from those of others, a phenomenon he called **egocentrism**. Children may assume others share their perspectives and thoughts, and they can find it amusing to crash toys or bang kitchen utensils, for example, because they may not be aware the noise can disturb others.

When out at night, a preoperational child might observe that “the moon is following me” when it seems to move with them. This sense of **animism**, the belief that objects are alive and possess consciousness, is another egocentric feature. Children may treat inanimate objects as if they have emotions and thoughts, just like themselves. For example, a child may talk to a teddy bear as if it were a living being with feelings (Figure 5.14). A car that needs repair might "not feel well." A child who is hurt while riding a tricycle or playing with blocks may want to punish the objects because they believe the objects acted intentionally to cause harm.

FIGURE 5.14 Animism, a feature of egocentric thought, is the belief that some objects are alive and possess consciousness. (credit: modification of work "My teddy bear will keep me safe" by Beatrice Murch/Flickr, CC BY 2.0)

Following Piaget, several theorists in cognitive psychology and overlapping psychology fields have expanded the understanding of egocentrism and perspective-taking. Two important contributions providing further insight into egocentrism are theory of mind and the false-belief task. The **theory of mind** is our awareness that our own beliefs and perspectives are different from those of others. This develops in humans and some animals, such as chimpanzees, at various rates (Premack & Woodruff, 1978; Baron-Cohen et al., 1985). A **false belief** occurs when children too young to possess a theory of mind assume that other people have the same knowledge they possess (Airenti, 2015). In the classic false-belief task experiment, a child observes an individual hiding a toy in one location and then leaving the room (Wimmer & Perner, 1983). After watching a different individual move the toy to another location, the child is asked where the first person would look for the toy. Children who have developed a theory of mind understand that the first person will look in the original location. Younger children, often still in the preoperational stage, typically say the person will look for the toy in the location to which it was moved: they assume the first person's beliefs are the same as their own (Figure 5.15).

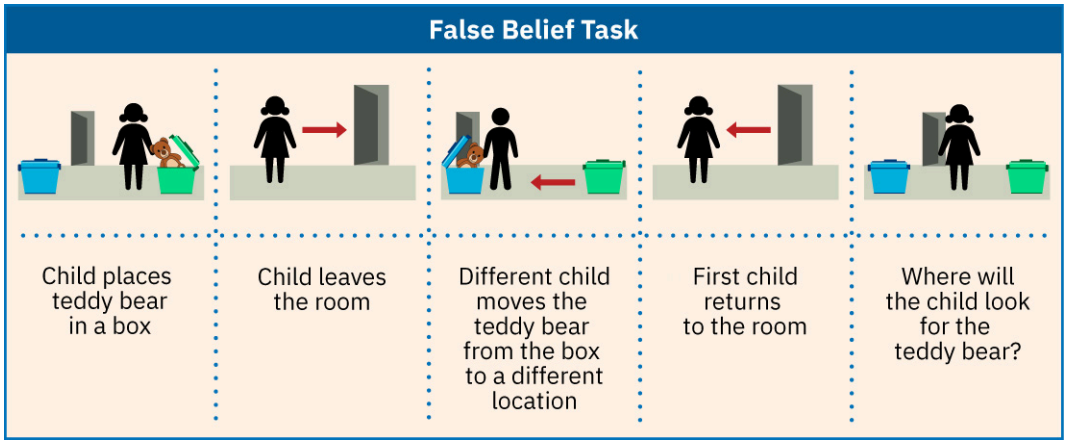


FIGURE 5.15 In the false-belief task, researchers are able to observe the current perspective-taking skills of a child based on how they answer the question of where the person will look for the hidden item. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

LINK TO LEARNING

Watch this demonstration of the false-belief task (https://openstax.org/r/104FalseBelief) to learn more.

At the end of the preoperational stage, children develop the ability to better perceive the perspectives of others,

including understanding that others can have different beliefs from their own. Recent research demonstrates that thinking and the ability to understand different beliefs become more sophisticated in early childhood than Piaget originally believed, and that children indeed understand that other people have thoughts of their own (Zhao et al., 2021).

To further study how children understand others, Piaget and Inhelder (1969) devised an experiment called the three-mountains task to determine when children begin to decenter (pay attention to multiple points of view). In this setting, the researchers show children a group of plaster mountains and place a doll on a side of the platform opposite to where the child is seated. The child is then shown a series of pictures and asked to choose the one that represents the doll's perspective. At the age of four, children consistently chose the pictures that represented their own viewpoint rather than the doll's. By age seven, however, children were able to correctly identify the doll's view, indicating a decrease in egocentric thinking. The three-mountains task demonstrates a transition from a stage of limited perspective to one that includes the ability to consider another person's point of view. When children begin to think logically in this way, they are engaging in the concrete operations that represent the third stage of Piaget's theory.

LINK TO LEARNING

Watch this demonstration of the three-mountain task (https://openstax.org/r/1043MtnTask) to learn more about children's ability to see others' perspectives.

Centration

Another hallmark of Piaget's preoperational stage is the process of **centration**, in which a child focuses attention on only one characteristic of an object or situation at a time. Piaget demonstrated this tendency in children through tasks that tested **conservation**, their understanding that changing the appearance of a substance does not alter mass, number, or volume. For instance, in a liquid conservation task, a child is shown two identical beakers and asked to confirm that they hold the same amount of liquid. Next, the child is instructed to pour the contents of one beaker into a taller, narrower container. When asked which beaker contains more liquid, preoperational children tend to select the taller container because their attention is centered on the height of the liquid. Children may also demonstrate a lack of conservation of mass, length, number, and area. A preschooler may be upset if they have only one cookie instead of two halves like their playmate. But breaking the cookie in half so both children appear to have the same amount is likely to bring satisfaction.

LINK TO LEARNING

Watch children demonstrating conservation tasks demonstration of conservation (https://openstax.org/r/104conservation) involving mass, quantity, and volume. Children in the preoperational stage demonstrate their inability to solve these conservation tasks but children in the concrete operational stage can do so and to explain their thought processes while solving the problems.

Information Processing Theory

The information processing theory views cognitive development as a continuous loop of information processing and storage, as you learned in 3.4 Cognition and Memory in Infants and Toddlers. Individuals initially attend to incoming information, which is then processed and organized so that it can be efficiently stored. Memories are continually compared and evaluated against each another, allowing for systematic retrieval of information. More advanced cognitive skills develop when we store new information, compare it with existing memories, and generate appropriate responses.

Information processing includes the interrelated processes of executive function, attention, and memory. These cognitive processes play important roles in helping children learn, problem-solve, and adapt to their

environment. Recall that executive function includes skills like planning, organizing, decision-making, and impulse control. These also necessitate the use of attention, which is the ability to focus on specific stimuli while ignoring distractions. That is, individuals need to attend to multiple bits of information when they plan, organize, and make decisions.

People also need to diminish distractions, a process called inhibitory control, which allows regulation of impulses and focus. These components of information processing begin developing in early childhood when infants have limited attention spans. With time, children become better at sustaining attention as well as shifting efficiently between tasks. In addition, executive function includes actions related to memory.

Memory Development

To process information, our memory systems encode, store, and eventually retrieve the information. In this way, information processing theory explains how memory systems help us retain knowledge, recall past experiences, and build a foundation for cognitive advancement and learning.

Another major milestone of memory development in early childhood is the ability to hold an **autobiographical memory**. Autobiographical memories are long-term memories of individual life experiences and events. Our earliest memories often begin to develop in early childhood and continue to improve through adolescence (Harley & Reese, 1999; Bauer & Larkina, 2017). Development of this type of memory can help children recall past experiences, develop self-knowledge, and shape their growing sense of identity over time (Ross et al., 2020; Habermas &. Reese, 2015).

Autobiographical memory can be improved and scaffolded by caregivers. When caregivers engage in past-talk conversations, such as helping a child remember a recent family gathering or event, children show improved autobiographical memory, socioemotional skills, and self-regulation (Levya et al., 2019; Wu & Jobson, 2019). For example, a parent may help a four-year-old better recall a grandparent who lives far away by asking, “Do you remember when Grandpa visited and we all went to the pumpkin patch? The pumpkins were so bright and we rode in a truck with hay bales!” Prompts like this can help children improve their autobiographical memory and better remember grandpa before his next visit.

The Continuous Nature of Cognitive Development

The information processing theory builds on foundational theories, including Piaget's cognitive stage theory. It provides a model that acknowledges the maturational changes outlined by Piaget, while also incorporating the modern, expanded view that environmental circumstances and executive functions matter. For example, both theories agree that a five-year-old child would not be expected to understand advanced algebra. However, they have different views regarding a child's potential to later learn the complexities of math.

Piaget theorized that development consisted of step-like, qualitative changes. In information processing theory, the quantity of information is a significant factor in cognitive growth. Although substantial evidence confirms Piaget’s theory that the order of stages is fixed, children’s progression through them may either be accelerated or delayed (Winstanley, 2023). The social environment, which includes schools and caregivers, also plays an important role.

The continuous nature of development, including both qualitative and quantitative changes, is exemplified in nearly everything we learn. For example, our understanding of math is a progression from simply counting to performing elementary arithmetic, to tackling more advanced concepts. However, like upgrading a device to a more powerful processor, maturation allows us to think differently about math as we develop, demonstrating the complementary nature of Piaget’s stages and information processing. Psychologists can theorize that thinking matures in a similar way during the development of our understanding of oral language, music, biology, and other subject matters.

We also update our processing skills by continually observing and imitating the behavior of others. The complementary nature of information processing and learning theories is evident in the way we acquire

reading skills. To decode words, we rely on our accumulated knowledge of sounds and meanings. In addition, we are constantly being exposed to new vocabulary, assorted word meanings, and varied sentence structures. Thus, we experience a continual interplay between storage and processing of words, which facilitates our retrieval of previously acquired semantic memories. This cognitive feedback loop allows us to refine and expand our vocabulary, leading to improved reading and comprehension skills. We also grow increasingly proficient at expressing desires and understanding the world, a process that becomes naturally self-reinforcing.

Sociocultural Theory of Cognitive Development

You've learned that information processing and learning theories complement the individual experiences described by Piaget. In addition, a more modern view of Piaget acknowledges the role of contextual factors in cognitive development (DeVries, 1997).

Social and Cultural Influences on Cognition

Lev Vygotsky's **sociocultural theory** was the first major cognitive theory to outline the importance of cultural context (Vygotsky, 1978). Unlike Piaget, Vygotsky emphasized the role of social and cultural factors on individual cognitive development (Figure 5.16). For instance, at a very basic level, the importance of social structure is demonstrated by the finding that children who are consistently cared for by the same available, committed adults perform better cognitively than those who are placed in orphanages (Badakar et al., 2017). And in a classroom setting, children who have collaborative learning opportunities will generally advance more efficiently than those who work only independently (Kraatz et al., 2019).

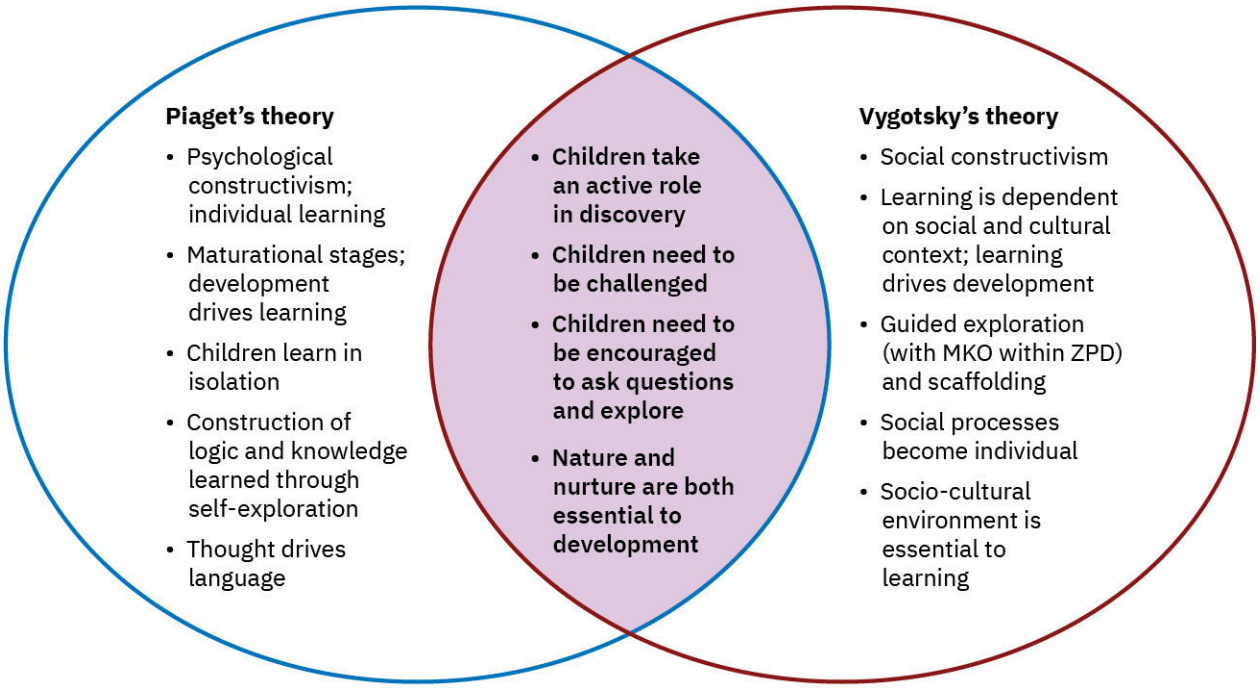


FIGURE 5.16 Piaget's and Vygotsky's theories of learning take different approaches but have some shared concepts about learning. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

However, cultural and societal factors go beyond supervision and peer relationships. They extend to the availability of resources such as books, tutors, mentors, and extra learning opportunities. Think about the ways that children learn to process information differently in varied sociocultural situations, such as living in a nation undergoing a war versus a metropolitan suburb in a country at peace. Young children needing food or supplies in a warring country may have to think of creative ways to cross bridges or navigate open spaces without being seen. Having a constant visual map of their surroundings is necessary for daily survival. In contrast, children in an affluent suburb are likely to develop visual-spatial skills using toy building blocks or

completing school projects.

Groups and environments influence the development of other skills—such as using speech and written language, and following social behavior norms—where experiences and access to resources facilitate learning and growth. One pioneering example is known as the "hole-in-the-wall" experiment that began in 1999 with educational researcher Sugata Mitra's installation of an Internet-connected computer learning station in a wall facing a slum in Kalkaji, Delhi, India (Mitra, 2003). This station provided access to a technology learning tool not readily available to children in this disadvantaged community and allowed researchers to observe how children learn in the absence of supervision or direct instruction. Multiple studies that followed have revealed that groups of children can learn by themselves when given access to similar resources. Over the years of implementing and assessing the impact of these learning stations, children using the stations have independently acquired computer and academic skills as well as improved skills in communication and self-regulation (Mitra, 2003; Mitra & Dangwal, 2017; 2022).

The Zone of Proximal Development

A cornerstone of the sociocultural model of learning is that children who initially show less proficiency in a particular activity may not necessarily lack ability (Vygotsky, 1978). Vygotsky emphasized the need to look at a child's learning potential, rather than just focusing on tasks that have already been mastered (as standardized tests do). Vygotsky referred to the gap between a child's current knowledge and skills and their further potential for learning as the **zone of proximal development (ZPD)** (Figure 5.17). The ZPD encompasses the activities a child cannot complete alone but can accomplish with the aid of a more skilled adult or peer, often referred to as the "more knowledgeable other" (Huang, 2021).

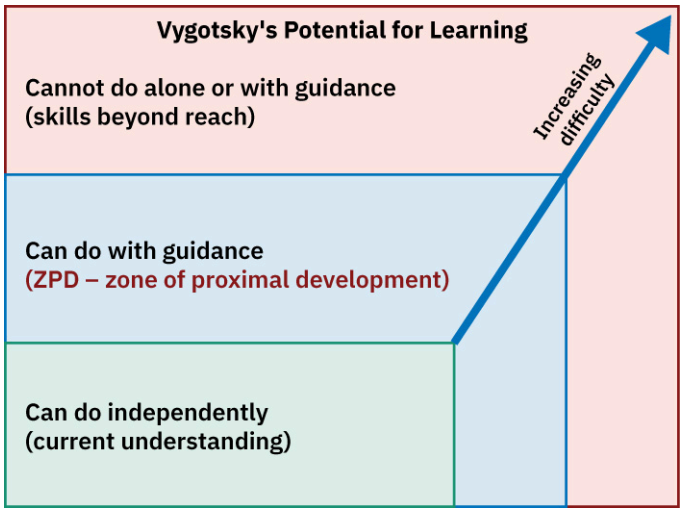


FIGURE 5.17 Vygotsky's zone of proximal development, or ZPD, includes unmastered skills and abilities that can be learned through guidance. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In school especially, children learn complex tasks with the assistance of a more knowledgeable person, namely their teacher or peers (Figure 5.18). Then, as they become more proficient and develop advanced cognitive abilities, the amount of assistance received from these knowledgeable others gradually decreases. This process of temporary learning support is called **scaffolding**. Although Vygotsky did not use that term, it has become a fundamental part of social constructivism theory and illustrates the way we transition from collaborative learning to independent learning.

FIGURE 5.18 Kindergarten children learn both independently and, in their zone of proximal development, with various levels of scaffolding or support from teachers and peers. (credit: “kindergarten, in session” by “woodleywonderworks”/Flickr, CC BY 2.0)

Observational Learning and Pitching In

Another perspective on sociocultural learning was conceptualized by Barbara Rogoff, whose research has shown that children’s cognition develops in part when they observe and contribute to ongoing community and home activities. This way of collaborative learning is particularly common in Indigenous communities of the Americas (Coppens et al., 2014; Coppens & Rogoff, 2022). Rather than isolating children from adult work, these communities emphasize collaboration among members of all ages. Children work alongside others by observing, listening, and taking part, such as contributing to tasks such as household work. Immersed in activities, children can experience the freedom to autonomously construct knowledge and support cultural practices.

One of Rogoff's important concepts is "pitching in," the practice in which children actively participate in household and community activities from a young age (Figure 5.19). Children explore the world, practice, play, and are guided by community expectations. Others guide them by example, correct their efforts, tell stories, advise, and explain in context. Rogoff calls this multifaceted approach Learning by Observing and Pitching In (LOPI). She contrasts it with “assembly-line instruction,” which she describes as more controlling and isolating, and characteristic of most Westernized schools (Rogoff et al., 2011). The learning of languages is one area in which researchers can observe these differences.

FIGURE 5.19 When children learn by pitching in, they develop necessary skills and gain a sense of responsibility and belongingness. (credit: "Folding laundry" by Sarah Evans/Flickr, CC BY 4.0)

LINK TO LEARNING

Learn more about Barbara Rogoff's work (https://openstax.org/r/104RogoffWork) on the benefits of letting children collaborate.

References

Airenti, G. (2015). Theory of mind: A new perspective on the puzzle of belief ascription. *Frontiers in Psychology, 6*, 1184. https://doi.org/10.3389/fpsyg.2015.01184

Badakar, C. M., Thakkar, P. J., Hugar, S. M., Kukreja, P., Assudani, H. G., & Gokhale, N. (2017). Evaluation of the relevance of Piaget's cognitive principles among parented and orphan children in Belagavi City, Karnataka, India: A comparative study. *International Journal of Clinical Pediatric Dentistry, 10*(4), 346–350. https://doi.org/10.5005/jp-journals-10005-1463

Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a "theory of mind"? *Cognition, 21*(1), 37–46. https://doi.org/10.1016/0010-0277(85)90022-8

Bauer, P. J., & Larkina, M. (2017). Predictors of age-related and individual variability in autobiographical memory in childhood. *Memory, 27*(1), 63–78. https://doi.org/10.1080/09658211.2017.1381267

Coppens, A. D., & Rogoff, B. (2022). Cultural variation in the early development of initiative in children's prosocial helping. *Social Development, 31*(3), 656–678. https://doi.org/10.1111/sode.12566

Coppens, A. D., Silva, K. G., Ruvalcaba, O., Alcalá, L., López, A., & Rogoff, B. (2014). Learning by observing and pitching in: Benefits and processes of expanding repertoires. *Human Development, 57*(2–3), 150–161. https://doi.org/10.1159/000356770

Dailey, S., & Bergelson, E. (2021). Language input to infants of different socioeconomic statuses: A quantitative meta-analysis. *Developmental Science, 25*(3), Article e13192. https://doi.org/10.1111/desc.13192

DeVries, R. (1997). Piaget's social theory. *Educational Researcher, 26*(2). https://doi.org/10.3102/0013189X026002004

Habermas, T., & Reese, E. (2015). Getting a life takes time: The development of the life story in adolescence, its precursors and consequences. *Human Development, 58*(3), 172–201. https://doi.org/10.1159/000437245

Harley, K., & Reese, E. (1999). Origins of autobiographical memory. *Developmental Psychology, 35*(5), 1338–1348. https://doi.org/10.1037//0012-1649.35.5.1338

Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Paul H. Brookes Publishing Co.

Huang, Y. (2021). Comparison and contrast of Piaget and Vygotsky's theories. In J. Wang, B. Achour, & C. Y. Huang (Eds.), *Proceedings of the 7th International Conference on Humanities and Social Science Research (ICHSSR 2021): Vol. 554* (pp. 28–32). Atlantis Press. https://doi.org/10.2991/assehr.k.210519.007

Hutton, J. S., Dudley, J., Horowitz-Kraus, T., DeWitt, T., & Holland, S. K. (2020). Associations between home literacy environment, brain white matter integrity and cognitive abilities in preschool-age children. *Acta Paediatrica, 109*(7), 1376–1386. https://doi.org/10.1111/apa.15124

Kirolos, A., Goyheneix, M., Eliasz, M. E., Chisala, M., Lissauer, S., Gladstone, M., & Kerack, M. (2022). Neurodevelopmental, cognitive, behavioural and mental health impairments following childhood malnutrition: A systematic review. *BMJ Global Health, 7*(7), Article e009330. http://dx.doi.org/10.1136/bmjgh-2022-009330

Kraatz, E., Nagpal, M., Lin, T-J., Hsieh, M-Y., Ha, S. Y., Kim, S., & Shin, S. (2019). Teacher scaffolding of social and intellectual collaboration in small groups: A comparative case study. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.587058

Leyva, D., Reese, E., Laible, D., Schaughency, E., Das, S., & Clifford, A. (2019). Measuring parents' elaborative reminiscing: Differential links of parents' elaboration to children's autobiographical memory and socioemotional skills. *Journal of Cognition and Development, 21*(1), 23–45. https://doi.org/10.1080/15248372.2019.1668395

Mitra, S. (2003). Minimally invasive education: A progress report on the "hole-in-the-wall" experiments. *The British Journal of Educational Technology, 34*(3), 367–371. https://doi.org/10.1111/1467-8535.00333

Mitra, S., & Dangwal, R. (2017). Acquisition of computer literacy skills through self-organizing systems of learning among children in Bhutan and India. *Prospects, 47*, 275–292. https://doi.org/10.1007/s11125-017-9409-6

Mitra, S., & Dangwal, R. (2022). Evolution of the "hole-in-the-wall": A status review. *Prospects, 52*, 209–222. https://doi.org/10.1007/s11125-021-09552-y

Piaget, J., & Inhelder, B. (1969). *The child's conception of space*. W. W. Norton & Company.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences, 1*(4), 515–526. http://dx.doi.org/10.1017/S0140525X00076512

Rogoff, B., Correa-Chávez, M., & Silva, K. G. (2011). Cultural variation in children's attention and learning. In M. A. Gernsbacher, R. W. Pew, L. M. Hough, & J. R. Pomerantz (Eds.), *Psychology and the real world: Essays illustrating fundamental contributions to society* (pp. 154–163). Worth Publishers. https://psycnet.apa.org/record/2011-19926-020

Ross, J., Hutchison, J., & Cunningham, S. J. (2020). The me in memory: The role of the self in autobiographical memory development. *Child Development, 91*(2), e299–e314. https://doi.org/10.1111/cdev.13211

Sheridan, M. A., Mukerji, C. E., Wade, M., Humphreys, K. L., Garrisi, K., Goel, S., Patel, K., Fox, N. A., Zeanah, C. H., Nelson, C. A., & McLaughlin, K. A. (2022). Early deprivation alters structural brain development from middle childhood to adolescence. *Science Advances, 8*(40). https://doi.org/10.1126/sciadv.abn4316

Tompkins, V. (2022). Relations between the home literacy environment and young children's theory of mind. *Cognitive Development, 62*, Article 101179. https://doi.org/10.1016/j.cogdev.2022.101179

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.
Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition, 13*(1), 103–128 https://doi.org/10.1016/0010-0277(83)90004-5
Winstanley, M. A. (2023). Stages in theory and experiment. Fuzzy-structuralism and Piagetian stages. *Integrative Psychological and Behavioral Science, 57*(1), 151–173. https://doi.org/10.1007/s12124-022-09702-7
Wu, Y., & Jobson, L. (2019). Maternal reminiscing and child autobiographical memory elaboration: A meta-analytic review. *Developmental Psychology, 55*(12), 2505–2521. https://doi.org/10.1037/dev0000821
Zhao, C., Shang, S., Compton, A. M., Fu, G., & Sai, L. (2021). A longitudinal study of the relations between theory of mind, executive function, and lying in children. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.766891
Zubler, J. M., Wiggins, L. D., Macias, M. M., Whitaker, T. M., Shaw, J. S., Squires, J. K., Pajek, J. A., Wolf, R. B., Slaughter, K. S., Broughton, A. S., Gerndt, K. L., Mlodoch, B. J. & Lipkin, P. H. (2022). Evidence-informed milestones for developmental surveillance tools. *Pediatrics, 149*(3), Article e2021052138. https://doi.org/10.1542/peds.2021-052138

5.4 Language in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the features of formal language
- Explain how we use language to understand cognitive development
- Summarize the way the environment influences language development in early childhood
- Distinguish among populations with individual differences in language development

When Emilia started preschool at age three, she was using more than 500 words and could understand about twice that number. By the time she entered kindergarten at age five, she recognized well over 10,000 words. In addition, Emilia has been picking up different dialects, slang words, and idioms based on her culture, heard in her neighborhood, and learned from the adults and other children at school. As Emilia's language use advances, it will become a tool for her self-reflection and discovery, complementing her cognitive growth.

In this section, you'll learn about the fundamentals of language construction and explore literacy, a sophisticated and relatively new human invention. In modern society, literacy has become an integral part of human development.

Defining Features of Language

Every language has unique characteristics children must learn. Let's revisit and further describe those components of language that were first introduced in 3.5 Language in Infants and Toddlers, beginning with the smallest components.

Phonology

Recall that phonology is the branch of linguistics that studies the sound systems of languages, the way sounds are organized and combined to form words and sentences. This is done by analyzing phonemes, or the smallest units of sound. For example, the word "bit" has three phonemes: /b/ /i/ /t/. Native speakers of a language distinguish between different phonemes and use them correctly in words and sentences, even though they may not be consciously aware of the phonetic rules governing their use. Phonological awareness, or the ability to recognize and manipulate the sounds of language (like /b/i/t/), is a key component of reading and writing skills.

Some languages have more phonemes than others or use tone or pitch to differentiate between words. For instance, the fact that, in American English, we pronounce "bass" differently to mean a deep sound and a type of fish is just one example of the way phonemes differentiate the meaning of otherwise similar words. Language development and linguistics researchers have identified around 800 phonemes among various languages (Kuhl, 2015). Studying phonology can provide insights into the features of different languages, the way humans acquire language, and the way language is processed by the brain.

Morphemes

Morphemes are the smallest units of language that have meaning. They include prefixes, suffixes, and roots, the building blocks of words, and they can also be isolated words. For example, the word "unfillable" combines three morphemes, each with its own unique meaning: *Un* + *fill* + *able* (*un*- meaning "not", *fill* as in the verb, and -*able* meaning "capable of"). Morphemes are integral to spoken, written, and signed languages.

As children expand their implicit understanding of morphological structures, they enhance their vocabulary and comprehension skills. That is, as they begin to recognize the way morphemes combine and alter words, they become able to decode unfamiliar words. In turn, their reading and communication skills improve. Morphological awareness not only aids in vocabulary development but also plays an important role in syntactic and semantic understanding, which contribute to overall language learning proficiency

Semantics

The study of the meaning of words and sentences in a language is called **semantics**. It looks at the way words are used and understood in different contexts. Part of learning language is recognizing these diverse contextual meanings. For example, the word "sick" can refer to being ill or, in modern slang, being awesome. As children gain an understanding of diverse meanings of words and phrases, they are able to more easily navigate social and academic environments.

Syntax

The set of rules that govern the way we combine words to form phrases, clauses, and sentences in a language is called **syntax**. It orders the structure of sentences and the ways in which words are arranged and changed to convey meaning, such as through subject-verb agreement, verb tense, the use of modifying adjectives and adverbs, and word order. For example, the standard word order in English is subject-verb-object. English also generally places adverbs and adjectives before the words they modify, as in *"I really like your blue dress."* Spanish, however, puts the modifiers after, as in, *"Me gusta mucho tu vestido azul" ("I like very much your dress blue.").*

Syntax also helps us analyze variations in sentence structure. We can see how the arrangement of words influences the interpretation when we change the sentence *"The child ate a banana"* to "*The banana ate a child."* When children learn more vocabulary and improve their language skills, they use more diverse syntax and improve their communication skills.

Grammar

While syntax governs the order of words, it is grammar that enables us to communicate accurately. Grammar codifies a language's rules of usage, pronunciation, tone, and word order, encompassing both syntax and morphology. Our mastery of grammar goes through an extraordinary transformation in early childhood. Children transition from overextensions of grammar rules, also known as overregularization, to greater mastery of grammar rules. For example, they transition from grammar mistakes like "I runned with my dog" to the correct "I ran with my dog."

Grammar consists of rules, but it is also shaped by the social and cultural context in which it is used, reflecting regional dialects, SES, and cultural norms. For example, African American Vernacular English (AAVE) has a distinct grammar that differs from standard English, including unique features such as the use of double negatives (Kurinec & Weaver, 2021; Rickford et al., 2015). Research suggests that AAVE is often associated with negative stereotypes and biases as early as preschool age (Harris & Schroeder, 2013). These biases can have negative implications for the cognitive, social, and academic outcomes of Black children who speak it, and for Black adults in encounters with law enforcement, the legal system overall, and the workplace (Kurinec & Weaver, 2021). It is essential to address these biases early through education and awareness-raising efforts.

Children also tend to seamlessly engage in **code-switching**, the practice of alternating between two or more languages or language varieties based on their dialogue partner or the setting of the conversation. They can naturally switch between English and their family's native language at home, and then speak English with teachers and friends at school. This linguistic phenomenon is more prevalent in multilingual or multicultural environments and can occur for social, cultural, or situational reasons. Code-switching allows children to be comfortable in different social contexts and convey subtle meanings, cultural affiliations, or emotions.

Pragmatics

In contrast to semantics, **pragmatics** is the way we use language in different situations, what we intend when communicating, and the cultural norms that govern language use. For example, "Thanks" can sound sincere, sarcastic, or even flirtatious depending on tone and body language. A child's use of words and expression is likely to be different during a classroom lesson than on the playground (Figure 5.20).

(a)

(b)

FIGURE 5.20 Children learn to communicate in diverse ways depending on culture, social norms, situational attributes, and overall context. Their communication style is likely to differ between the (a) classroom and the (b) playground. (credit a: modification of work "05202013 - Savoy Elementary School Visit 66" by U.S. Department of Education/Flickr, CC BY 2.0; credit b: modification of work "Blanchard Recess_4975c" by James Emery/Flickr, CC BY 2.0)

In early childhood, the development of pragmatic skills includes learning how to take turns in conversation, ask and answer questions, and use eye contact and body language to convey meaning. Even young children adjust their language based on the social context and the people they are communicating with, as in code-switching and the use of different meanings for words like "sick." Soon they will develop the pragmatic skills to persuade, negotiate, and perhaps manipulate. As cognition becomes less egocentric, children take the listener's perspective into account and might change their intonation and emphasis to clarify meaning.

Language in Cognitive Growth and Communication

Language development is essential to human development and serves as both a window into our cognitive processes and a tool for communication and social interaction. In children, language development provides a critical foundation for overall cognitive and socioemotional development.

While language learning comes readily to most young children, adults who have attempted to learn an additional language know it is a complex process that requires considerable effort. This difficulty demonstrates that there are critical and/or sensitive periods for learning language, and they end well before early childhood ends at age seven. In other words, childhood is an optimal period in which to learn both your first language and a second language as well. The well-known case of Genie, a severely neglected and abused child who at thirteen years old had not been exposed to much language, demonstrates the impact of environmental effects on long-term language acquisition (Curtiss, 1977).

However, far less extreme circumstances than Genie's have direct effects as well, as shown in studies by Hart and Risley (1995) and others. In addition, children who are deaf or hard of hearing may develop language deficits due to their diminished language exposure. This risk is higher when disabilities are left undiagnosed, making early intervention and detection critical to promoting language development for all.

LINK TO LEARNING

This brief clip about the story of Genie (https://openstax.org/r/104LangDeprive) provides a window into the

effects of language deprivation.

Language as a Window into Cognition

Language is often described as a window into cognition because it provides insight into the underlying cognitive processes that allow us to think, reason, and solve problems (Federmeier et al., 2020). For example, language allows us to form categories, make predictions, and infer relationships between words and concepts. These processes are integral to cognitive development.

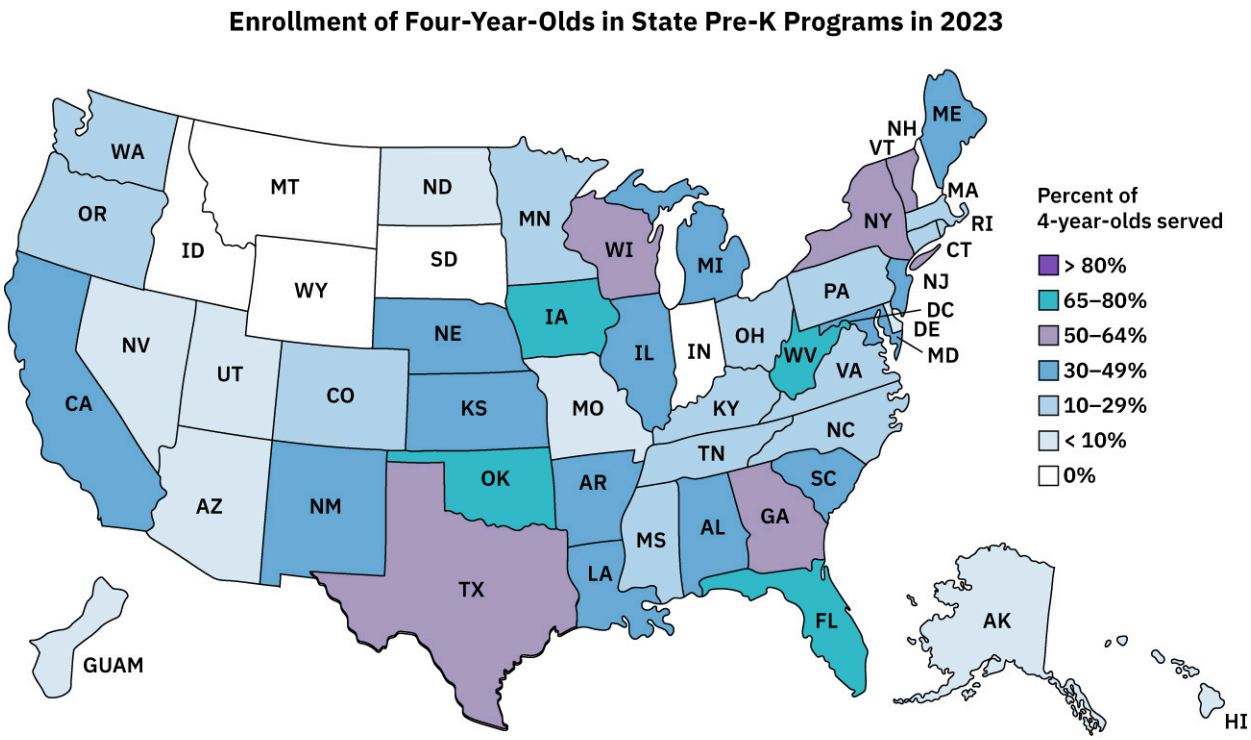
Studying language development also provides insight into cognitive deficits and developmental delays. For instance, children with language impairments may exhibit difficulty with grammar and syntax, often initial indicators of cognitive deficits (McGregor et al., 2022). Similarly, children with autism spectrum disorder often struggle with language development and social communication. Their difficulties in processing social cues and inferring meaning in social interactions suggest that cognition plays a role in language and socialization.

Language as a Tool for Communication and Learning

Of course, language is also a powerful tool for communication. It allows us to express needs, share experiences, and form social connections. It helps children develop theory of mind and perspective-taking. Moreover, language use and exposure play significant roles in shaping children's psychosocial development. For example, positive and responsive language interactions between parents and children are associated with better psychosocial outcomes, such as increased empathy and better social skills (Frosch & Schoppe-Sullivan, 2021). Language-rich environments promote better cognitive outcomes in children too, including a more robust foundation to acquire reading and writing skills, essential components of academic success (Logan et al., 2019).

Research has attempted to both confirm and broaden our knowledge of family talking behaviors that lead to language and communication differences. Gilkerson et al. (2017) used automated recorders to collect speech data from children and their caregivers and found significant variability within and across SES groups, primarily based on mother's education level. While there was a wide range of vocabulary skills within both high- and low-SES families, SES was a predictive factor for the way families interact. Children of mothers with a higher education talk more, have more adult-child interactions, and are more engaged overall. Because early language skills are strong predictors of a child's later academic success, these results offer important implications for improving language development for all children (Durham et al., 2007).

These conclusions also indicate the need for early interventions designed for at-risk children. Those who are raised in impoverished language environments can benefit from home-visit programs, high-quality childcare, and pre-kindergarten programs (Figure 5.21). These have been shown to improve early language exposure and lead to better long-term outcomes for children (Bierman et al., 2018; Vernon-Feagans, & Bratsch-Hines, 2013; Williams et al., 2020). The simple understanding that talking more improves outcomes has potential long-term benefits.



Source: Friedman-Krauss et al. (2024). The State of Preschool 2023: State Preschool Yearbook. National Institute for Early Education Research. Friedman-Krauss, A. H., Barnett, W. S., Hodges, K. S., Garver, K. A., Jost, T. M., Weisenfeld, G., Duer J. (2024). The State of Preschool 2023: State Preschool Yearbook. New Brunswick, NJ: National Institute for Early Education Research.

FIGURE 5.21 More states are recognizing the value of pre-kindergarten programs, which can have a beneficial impact on language development in early childhood (Friedman-Krauss et al., 2024). (credit: modification of work "Figure 4" by Friedman-Krauss et al./National Institution for Early Education Research, Public Domain)

Individual Differences in Language

Because language appears to come so naturally, we often take for granted the varied trajectories that exist among young language learners. In this section we explore the differences, challenges, and advantages that might exist for different populations of children.

Language Development in Deaf Children

Children who do not receive any language input during their first two years of life, whether due to deafness or other factors, run the risk of never achieving language fluency (Hall et al., 2019; Humphries et al., 2012). Therefore, children born deaf or hard of hearing are often at risk of delays in language acquisition and cognitive development if they do not receive appropriate support.

Exposing deaf children to sign language early is crucial because it provides them both a visual and tactile form of communication to interact with their environment (Hall, 2018). American Sign Language (ASL), the most widely used sign language in the United States, is recognized as a natural language with its own grammar and syntax (Figure 5.22). ASL and other sign languages have the same defining features of language discussed previously:

- There is a distinct *grammatical structure*, including rules governing word order and sentence construction.
- Sign languages have similar *phonological components,* including morphemes and phonemes. These may be conveyed through specific handshapes, movements, and facial expressions.
- Sign languages have their own *syntax*, governing the arrangement of signs to convey meaning.

- Symbols and signs convey *semantics* in a manner like that of voiced languages.
- As in voiced languages, *pragmatic principles* exist for different social and cultural contexts.

Regardless of which languages we use, our brains process linguistic information in a comparable manner.

FIGURE 5.22 Signing is as unique as any voiced language. (credit: "Learning sign language" by David Fulmer/Flickr, CC BY 2.0)

Technology has introduced new ways for deaf children to learn language through devices like cochlear implants and hearing aids that can offer some auditory input. Speech therapy can also help children develop spoken language skills. Research does not necessarily support emphasizing deaf children use voice as the primary means of communication. Only a small fraction of children (2–3 out of every 1,000) are born deaf, more than 90 percent of whom are born to hearing parents. Debate is ongoing over whether deaf children learn to speak because it benefits them or because it benefits others (Hall et al., 2019; Humphries et al., 2022; Lieberman et al., 2022). Ultimately, early and consistent support from caregivers, educators, and medical professionals is the key to successful language learning in deaf children. With resources and guidance, they can develop strong language skills like any other child, and children of diverse abilities may all benefit from language learning resources, including sign language and other nonverbal communication forms.

Development in Multilingual Environments

Children who grow up in multilingual environments learn and use multiple languages naturally. The process of acquiring multiple languages is not necessarily the same as acquiring a single language. Children may go through periods of mixing languages or may initially have a smaller vocabulary in each language. However, with continued exposure and practice, they easily become fluent in multiple languages.

Moreover, exposure to multiple languages in childhood is an experience-dependent process that may shape cognitive outcomes, including improved executive attention and minor differences in the way the brain processes language (Bialystok, 2017). There is also some evidence of a lifelong cognitive advantage, including greater neural sophistication and a delay in the onset of some dementias (Berkes & Bialystok, 2022; Liu & Wu, 2021). Children who speak multiple languages are also often better able to communicate and connect with people from diverse linguistic and cultural backgrounds.

There are not necessarily any best practices for raising a multilingual child. Some multilingual families choose to have different adults speak in specific languages, while in others every adult uses a mix of languages. Both approaches are successful, and early exposure provides the greatest advantage. Whatever approach is taken, it is essential to provide regular exposure and support for each language. Families in many countries, including the United States, Italy, and Indonesia, may also choose to enroll children in bilingual early childhood education programs, which may improve robust language development for children (Huang et al., 2023; Leotta, 2023; Chang, 2024).

LINK TO LEARNING

Watch this video about the Heckman Curve (https://openstax.org/r/104HeckmanCurve) to understand how investing in early childhood education provides lifelong benefits.

Early Literacy

Phonological awareness is the foundation for **literacy,** the ability to read, write, and understand information. Early literacy is enhanced by robust vocabulary development, phonological awareness, print awareness, and comprehension skills. Thus, children who have strong early literacy skills are more likely to enjoy academic success (Ramsook et al., 2020).

Parents and caregivers can support early literacy by reading to children regularly, supporting a text-rich environment with books and writing materials, and engaging in conversations and activities like storytelling and singing that promote language development. The repetition found in books and songs reinforces semantics, syntax, and grammar, and will promote a positive attitude towards reading. Reading books also furthers children's exposure to a wider range of vocabulary than they might hear in everyday speech and conversations.

Early literacy skills can also be fostered through high-quality early childhood education programs. Substantial research demonstrates that investing in publicly funded early childhood education programs like Head Start provides cognitive, social, economic, and public health benefits (Campbell et al., 2014; McCoy et al., 2017; Negussie et al., 2019). Studies have even found a net monetary benefit: children who are provided early services are less likely to require public funds later and are more likely to have a positive impact in their communities (Heckman, 2006; Varshney et al., 2022).

Although research has extensively explored older children's use of tablets for reading, currently there is only limited understanding of the impact of digital reading in the early stages of literacy development. One review compared the impact of interactive, enhanced e-books (that is, with embedded dictionaries) to that of print books and non-enhanced, non-interactive e-books on the literacy skills of young children (López-Escriban et al., 2021). Most of the books in the study were carefully chosen by teachers for artistic and literary quality. The analysis revealed that when high-quality material is used, both enhanced and non-enhanced e-books are either equal to or have an advantage over print books in promoting phonological awareness and vocabulary learning. These findings have positive implications for marginalized populations, including those at risk of learning disabilities and those from lower SES families, and offer another alternative to standardized school-based instruction.

References

Berkes, M., & Bialystok, E. (2022). Bilingualism as a contributor to cognitive reserve: What it can do and what it cannot do. *American Journal of Alzheimer's Disease & Other Dementias*. https://doi.org/10.1177/15333175221091417

Bialystok, E. (2017). The bilingual adaptation: How minds accommodate experience. *Psychological Bulletin*, *143*(3), 233–262. https://doi.org/10.1037/bul0000099

Bierman, K. L., Welsh, J., Heinrichs, B. S., & Nix, R. L. (2018). Effect of preschool home visiting on school readiness and need for services in elementary school: A randomized clinical trial. *JAMA Pediatrics*, *172*(8), Article e181029. https://doi.org/10.1001/jamapediatrics.2018.1029

Campbell, F., Conti, G., Heckman, J. J., Moon, S. H., Pinto, R., Pungello, E., & Pan, Y. (2014). Early childhood investments substantially boost adult health. *Science*, *343*(6178), 1478–1485. https://doi.org/10.1126/science.1248429

Chang, A. N. (2024). Teaching bilingual to young learners: The pros and cons. *Innovative: Journal Of Social Science Research*, *4*(1), 11271–11280. https://doi.org/10.31004/innovative.v4i1.9211

Curtiss, S. (1977). *Genie: A Psycholinguistic Study of a Modern-Day "Wild Child."* Academic Press.

Durham, R. E., Farkas, G., Hammer, C. S., Tomblin, J. B., & Catts, H. W. (2007). Kindergarten oral language skill: A key variable in the intergenerational transmission of socioeconomic status. *Research in Social Stratification and Mobility*, *25*(4), 294–305. https://doi.org/10.1016/j.rssm.2007.03.001

Federmeier, K. D., Jongman, S. R., & Szewczyk, J. M. (2020). Examining the role of general cognitive skills in language processing: A window into complex cognition. *Current directions in psychological science*, *29*(6), 575–582. https://doi.org/10.1177/0963721420964095.

Friedman-Krauss, A. H., Barnett, W. S., Hodges, K. S., Garver, K. A., Jost, T. M., Weisenfeld, G., Duer J. (2024). The State of Preschool 2023: State Preschool Yearbook. New Brunswick, NJ: National Institute for Early Education Research.

Frosch, C. A., Schoppe-Sullivan, S. J., & O'Banion, D. D. (2021). Parenting and child development: A relational health perspective. *American Journal of Lifestyle Medicine*, *15*(1), 45–59. https://doi.org/10.1177/1559827619849028

Gilkerson, J., Richards, J. A., Warren, S. F., Montgomery, J. K., Greenwood, C. R., Oller, D. K., Hansen, J. H. L., & Paul, T. D. (2017). Mapping the early language environment using all-day recordings and automated analysis. *American Journal of Speech-Language Pathology, 26*(2), 248–265. https://doi.org/10.1044/2016_AJSLP-15-0169

Hall, M. L., Hall, W. C., & Caselli, N. K. (2019). Deaf children need language, not (just) speech. *First Language, 39*(4), 367–395. https://doi.org/10.1177/0142723719834102

Hall, W. C. (2018). What you don't know can hurt you: The risk of language deprivation by impairing sign language development in deaf children. *Maternal and Child Health Journal, 21*(5), 961–965. https://doi.org/10.1007/s10995-017-2287-y

Harris, Y. R., & Schroeder, V. M. (2013). Language deficits or differences: What we know about African American Vernacular English, in the 21st Century. *International*

Education Studies, 6(4), 194–204. http://dx.doi.org/10.5539/ies.v6n4p194
Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Paul H. Brookes Publishing Co.
Heckman, J. J. (2006). Skill formation and the economics of investing in Disadvantaged children. *Science. 312*, 1900–1902. https://doi.org/10.1126/science.1128898
Huang, R., Baker, E. R., & Schneider, J. M. (2023). Executive function skills account for a bilingual advantage in English novel word learning among low-income preschoolers. *Journal of Experimental Child Psychology, 235*. https://doi.org/10.1016/j.jecp.2023.105714
Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Padden, C., Rathmann, C., & Smith, S. R (2012). Language acquisition for deaf children: Reducing the harms of zero tolerance to the use of alternative approaches. *Harm Reduction Journal, 9*(16). https://doi.org/10.1186/1477-7517-9-16
Humphries, T., Mathur, G., Napoli, D.J., Padden, C., & Rathmann, C. (2022). Deaf children need rich language input from the start: Support in advising parents. *Children, 9*(11). https://doi.org/10.3390/children9111609
Kuhl, P. K. (2015). Baby talk. *Scientific American, 313*(5), 64–69.
Kurinec, C. A., & Weaver, C. A. (2021). "Sounding Black": Speech stereotypicality activates racial stereotypes and expectations about appearance. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.785283
Leotta, P. C. (2023). Benefits of English for preschool children. The case study of a bilingual school in Italy. *International Journal of Linguistics, Literature and Culture, 10*(1), 46–54. http://dx.doi.org/10.19044/llc.v10no4a46
Lieberman, A. M., Mitchiner, J., & Pontecorvo, E. (2022). Hearing parents learning American Sign Language with their deaf children: A mixed-methods survey. *Applied Linguistics Review, 15*(1), 309–333. https://doi.org/10.1515/applirev-2021-0120
Liu, H., & Wu, L. (2021). Lifelong bilingualism functions as an alternative intervention for cognitive reserve against Alzheimer's disease. *Frontiers in Psychiatry, 12*. https://doi.org/10.3389/fpsyt.2021.696015
Logan J. A. R., Justice, L. M,. Yumuş, M., & Chaparro-Moreno, L. J. (2019). When children are not read to at home: The million word gap. *Journal of Developmental and Behavioral Pediatrics, 40*(5), 383–386. https://doi.org/10.1097/dbp.0000000000000657
López-Escribano, C., Valverde-Montesino, S., & García-Ortega, V. (2021). The impact of e-book reading on young children's emergent literacy skills: An analytical review. *International Journal of Environmental Research and Public Health, 18*(12), Article 6510. https://doi.org/10.3390/ijerph18126510
McCoy, D. C., Yoshikawa, H., Ziol-Guest, K. M., Duncan, G. J., Schindler, H. S., Magnuson, K., Yang, R., Koepp, A., & Shonkoff, J. P. (2017). Impacts of early childhood education on medium- and long-term educational outcomes. *Educational Researcher, 46*(8), 474–487. https://doi.org/10.3102/0013189X17737739
McGregor, K. K., Smolak, E., Jones, M., Oleson, J., Eden, N., Arbisi-Kelm, T., & Pomper, R. (2022). What children with developmental language disorder teach us about cross-situational word learning. *Cognitive Science, 46*(2). https://doi.org/10.1111/cogs.13094
Negussie, Y., Geller, A., & DeVoe, J. E. (Eds.). (2019). *Vibrant and healthy kids: Aligning science, practice, and policy to advance health equity*. National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK551492/
Ramsook, K. A., Welsh, J. A., & Bierman, K. L. (2020). What you say, and how you say it: Preschoolers' growth in vocabulary and communication skills differentially predict kindergarten academic achievement and self-regulation. *Social Development, 29*(3), 783–800. https://doi.org/10.1111/sode.12425
Rickford, J. R., Duncan, G. J., Gennetian, L. A., Gou, R. Y., Greene, R., Katz, L. F., Kessler, R. C., Kling, J. R., Sanbonmatsu, L., Sanchez-Ordoñez, A. E., Sciandra, M., Thomas, E., & Ludwig, J. (2015). Neighborhood effects on use of African American Vernacular English. *Proceedings of the National Academy of Sciences of the United States of America, 112*(38), 11817–11822. https://doi.org/10.1073/pnas.1500176112
Varshney, N., Temple, J. A., & Reynolds, A. J. (2022). Early education and adult health: Age 37 impacts and economic benefits of the child-parent center preschool program. *Journal of Benefit-Cost Analysis, 13*(1), 57–90. https://doi.org/10.1017/bca.2022.4
Vernon-Feagans, L., & Bratsch-Hines, M. E., & The Family Life Project Key Investigators (2013). Caregiver–child verbal interactions in child care: A buffer against poor language outcomes when maternal language input is less. *Early Childhood Research Quarterly, 28*(4), 858–873. https://doi.org/10.1016/j.ecresq.2013.08.002
Williams, S. C., Barajas, C. B., Milam, A. J., Olson, L., Leaf, P., & Connolly, F. (2020). Preparing students for success: Differential outcomes by preschool experience in Baltimore City, Maryland. *Prevention Science, 21*(4), 467–476. https://doi.org/10.1007/s11121-019-01069-3

5.5 Play in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify types of play
- Describe the developmental progression of play
- Explain the importance of play as a context for development in early childhood

Robbie's dad finds rainy days to be the hardest. His four-year-old son has trouble being cooped up indoors and is never happier than when he's zooming down the slide, concentrating on his monkey bar skills, or pretending to be a train engineer on the play structure at the playground. Play is an essential part of Robbie's development. It's a key component in his learning and socialization, and it fosters overall well-being. Through play, Robbie will explore his environment, engage with peers, and develop cognitive, physical, and emotional skills. Play will allow Robbie and his playmates to use their imagination, creativity, and problem-solving abilities in a natural, entertaining manner.

Play does not require expensive toys or modern playground equipment. In many lower-income parts of the world, even very young children occupy themselves without adult supervision for considerable parts of the day. They find things to play with alongside laboring parents or older siblings. In wealthier countries, children play quite differently. But even in the United States, there is wide disparity in opportunities for play. Suburban and rural areas may have more open spaces than urban ones; however, urban areas may have easier access to walkable community playgrounds. Closer proximity to safe, accessible outdoor play areas promotes healthy psychological development (Perez-del-Pulgar et al., 2021). Caregivers with less access to high-quality playgrounds may need to find other ways to encourage physical play for children to reduce risks of poor physical health outcomes (McCarthy et al., 2017). In every play environment, Vygotsky's concept of social constructivism is evident as children learn about the world around them and socialize accordingly.

Ideally, we want to create environments where children like Robbie can explore, make decisions, and initiate activities in play. Encouraging curiosity and determination will strengthen their sense of self and set the stage for later accomplishments and identity development. In this section, you'll learn about types of play from a developmental perspective, and then play's connection to overall physical, cognitive, and psychosocial

development—as well as its benefits and importance

Types of Play

Mildred Parten was a renowned U.S. sociologist and researcher best known for her seminal work on social play. Her research helped shape our understanding of the different types of play in which children engage and the social functions these activities serve. Based on her observations of children at nursery schools and playgrounds, Parten identified six different types of play (Table 5.3): **unoccupied play**, **solitary play**, **onlooker play**, **parallel play**, **associative play**, and **cooperative play**. Her classification system provides a framework for the way play evolves over time and reflects changes in children's social and cognitive development (Parten, 1932).

Forms of Play	Age Which They Typically First Appear	Characteristics	Cognitive Capabilities and Advancements
Unoccupied play	Birth to 3 months	Children are not really playing in the way that we often think of play. They are observing. A child may be performing random movements.	Early cognitive abilities are limited. The focus is on exploring the environment and learning through sensory experiences.
Solitary (independent) play	3 months	Children play alone and maintain focus on their activity. They do not acknowledge what others are doing. This kind of play is particularly valuable for the ability to explore new skills and news ways of thinking. It is also a way to prepare for social play.	Cognition has developed such that children engage in purposeful activities and learn through trial and error.
Onlooker play	2.5 years	Children observe others at play but do not become physically involved. They may engage in social conversation about the play without joining in the activity.	Children can observe and learn from the actions of others.
Parallel play	3.5 years	Children play separately from others but are physically close and engage in similar actions. For instance, two children may be building separate block structures in the same general space. This type of play is a transitional stage to more socially advanced play.	Children engage in parallel activities and learn through imitation.

TABLE 5.3 Parten's Six Stages of Non-Social and Social Play (source: Parten, 1932)

Forms of Play	Age Which They Typically First Appear	Characteristics	Cognitive Capabilities and Advancements
Associative play	4 years	There is now a focus on the other person as well as the play. Children may engage in the same activity and assist each other, but the activity is not a joint project. In block play, a child may hand over or suggest a particular block to use.	Cognitive abilities have developed such that children can engage in social interactions and learn through collaboration.
Cooperative play	4.5 years	Children are fully engaged with both the activity and the person. Activities are organized, and children adhere to roles or rules. They begin to identify with a group, perhaps incorporating the group identity. Examples include play-acting in various settings like kitchens and schoolrooms, and games that need rules, like hopscotch.	Children engage in complex problem-solving and learn through cooperation.

TABLE 5.3 Parten's Six Stages of Non-Social and Social Play (source: Parten, 1932)

Play as Context for Development

In preschool, play is an avenue for physical, cognitive, and psychosocial development. Recall that children learn through observation by watching and imitating their peers and adults. This process exposes them to new ideas and ways of doing things they may not have known before. Play offers a wealth of opportunities to learn through imitation and interaction with both peers and adults. Imitation is particularly effective when children are engaged in challenging activities like building a block tower or entering a new pretend-play environment.

Play is not simply another way to move. Even play that lacks much movement, like playing board games, can foster cognitive development, hone social skills and emotional regulation, improve language and problem-solving skills, and even facilitate cultural understanding (Ginsberg et al., 2007).

Importance of Play

Play and everyday creative activities are essential to learning and a crucial component of children's development (Dios Benítez-Sillero et al., 2022). They help children develop their language skills when they have conversations with others and use their imagination to create stories. Play helps children develop their fine and gross motor skills when they manipulate toys and objects and engage in physical activities such as running, throwing, and climbing (Figure 5.23).

FIGURE 5.23 This young child is engaging in independent play while practicing fine motor skills. (credit: "Young boy pressing the controls on the steering wheel of a toy vehicle" by Ivan Radic/Flickr, CC BY 2.0)

Play is also important for young children's mental health and well-being. It is a natural stress reliever and helps to manage emotions and anxiety. It provides a sense of joy and fulfillment, which contributes to self-esteem and confidence. The global scientific community has long been an advocate for children's unstructured free play. As long ago as 1989, the United Nations Convention on the Rights of the Child (UNCRC) named play one of fifty-four fundamental human rights, stating that every child has the right "to rest and leisure, to engage in play and recreational activities appropriate to the age of the child, and to participate freely in cultural life and the arts" (UN, 1989). Nearly two hundred countries have signed this international agreement.

LINK TO LEARNING

Learn about a child's right to play (https://openstax.org/r/104RighttoPlay) according to Article 13 of the Convention of the Rights of the Child.

However, schools have become increasingly focused on academic achievement and structured learning. Overall, play has become less valued than in the past (Waters et al., 2022). Even preschools have reduced playtime in favor of more academic instruction, which can result in a variety of negative consequences for children's development and well-being (Kahan & Poulos, 2023; Tong Lee et al., 2020). And despite recommendations from developmental scientists and other professionals, restricting play activity in schools remains a standard form of punishment in the United States (Global Recess Alliance et al., 2022; Kahan & Poulos, 2023).

The COVID-19 pandemic further complicated this reduction in play. First, because most educational and childcare institutions closed for weeks or months, children had reduced opportunities for unstructured free play with peers, incurring a developmental disadvantage. Second, after children returned to school, educators were concerned about making up for lost time and raised academic demands while limiting play. Additionally, children's screen time increased during the pandemic and remained elevated even after restrictions on gathering indoors were lifted (Hedderson et al., 2023; Li et al., 2023; Nery et al., 2023; Scott et al., 2022).

Peer Learning and Social Constructivism

Peer learning, another developmental product of preschool play, is particularly effective when children are engaged in activities that require collaboration and cooperation, such as building imaginary cities or playing a game (Figure 5.24). Through these interactions, children develop their cognitive and social skills, and those who struggle to learn on their own can receive support and guidance from peers rather than adults. As a result, children are more likely to display prosocial behaviors like sharing and cooperating, and less likely to display negative behaviors such as aggression (Scott & Cogburn, 2022; Toppe et al., 2019).

FIGURE 5.24 Peer learning offers children support and guidance from classmates rather than adults. (credit: "Corps engineers connect with students at Morgan State STEM expo" by U.S. Army Corps of Engineers/Flickr, Public Domain)

These outcomes should sound familiar. Recall Vygotsky's theory of social constructivism, which says learning occurs through social interactions. Thus, cognitive development is shaped by a child's cultural and social experiences. Learning is optimized when children are engaged in activities appropriate for their level of development and have opportunities to interact with more knowledgeable peers or adults. Therefore, collaboration through play provides a foundation for prosocial skills and cognitive pursuits (DeLay et al., 2016; Eggum-Wilkens et al., 2014; Scott & Cogburn, 2022).

Variations in Play

Preschool children engage in similar play throughout the world, but there is quite a bit of cultural and other kinds of variability. Some children may also face socioeconomic or physical challenges. Let's explore these differences.

Cross-cultural Differences in Play

Early childhood play activities vary widely across cultures, influenced by factors such as social norms, beliefs, values, and geographical location (Sims & Hutchins, 2011). For example, some cultures may place a greater emphasis on physical play such as running, jumping, and climbing, while others may focus more on imaginative play such as storytelling, puppetry, and role-playing (Göncü, 1993; Leisterer-Peoples, 2021; Stengelin et al., 2020; Stengelin et al., 2023).

One culture that emphasizes physical play is that of the Maasai people in East Africa. From a young age, children are encouraged to engage in jumping contests and spear-throwing games (Figure 5.25), in addition to football (soccer), volleyball, and variations of games like tag. These activities develop physical strength and endurance and prepare children for the physical demands of a semi-nomadic lifestyle and management of natural resources and livestock (Garvey, 1990; Tian et al., 2021). In contrast, the Inuit culture in Canada and Greenland stresses imaginative play, such as storytelling and role-playing. Children are encouraged to develop their creativity, often using natural materials such as snow, ice, and animal skins to create their own toys and games. Storytelling is a central part of Inuit culture, and children are often taught traditional stories and legends through play and storytelling activities (Lutkenhaus & Thomsen, 2013).

FIGURE 5.25 Maasai children engage in culturally specific as well as universal kinds of play, like soccer. (credit: "Soccer with the Maasai " by "ssilberman"/Flickr, CC BY 2.0)

The availability and use of outdoor play spaces varies as well. For example, in Scandinavian countries, outdoor play is a central part of early childhood education, and children are often encouraged to engage in unstructured play in natural settings (Dankiw et al., 2020; Einarsdóttir, 2011). Even in the winter in other northern climates, unstructured nature play is considered essential (Figure 5.26). Despite challenges due to a frigid climate much of the year, schools generally do not let weather impede scheduled outdoor activities. It not only benefits physical health, but research shows that children who participate in more nature activities show similar kindergarten-readiness as those who attend more academically focused preschools. Being outside also improves executive control, an important precursor to school success (Cordiano et al., 2019; Ernst et al., 2021; Zamzow & Ernst, 2020).

FIGURE 5.26 Despite challenging weather conditions, outdoor play is an essential component of Nordic early childhood education. (credit: modification of work "Snow1" by Kristjan Molstad/Flickr, CC BY 2.0)

In the United States, preschoolers engage in a variety of play activities both indoors and outdoors, including games of tag, hide-and-seek, and "Simon Says." Imaginative play with dolls, stuffed animals, and pretend kitchens is also encouraged. Some young children participate in organized sports, dance classes, and other physical activities.

In some environments group play is emphasized to help children learn social skills. Elsewhere individual play is encouraged to foster creativity and self-reliance. The types of toys and materials available to children can vary widely as well. Some parents may be perfectly comfortable strolling a garden while their children pick up

bugs and explore natural materials like sticks, stones, and leaves (Figure 5.27). Others may limit children to "cleaner" indoor activities. Some parents and educators might use more plastic toys, whereas electronic devices may be more common for others. A singular activity does not always have a profound impact on a child's developmental trajectory, but both adult behaviors and play activities can lead to varying behaviors and thought among groups of children (Wiseman et al., 2019).

FIGURE 5.27 Play behavior can include many different activities, ranging from exploring the natural world to using plastic toys indoors. Opportunities for play are affected by several factors, including SES, family values, the focus of individual schools, and access. (credit: "Children and Nature" by Children Nature Network/nappy, CC0 1.0)

Play and Gender

There is no doubt that traditional gender roles influence the types of play activities encouraged for boys and girls in many cultures. For example, boys may be encouraged to engage in heightened physical play and competition, while girls are guided toward quieter activities like drawing and storytelling (Telford et al., 2016). However, especially at the preschool level, children should never be limited or discouraged in play because of the way they look or their biological sex. All children should be treated equally when presented with opportunities to play.

Play and Socioeconomic Status

The influences of SES, specifically income and neighborhood factors, extends into play as well. On average, children from lower-income families live in smaller houses or apartments and closer to urban centers. These circumstances disproportionally influence their play experiences. Compared to peers in suburban or rural areas, children in urban areas have more limited outdoor play spaces, which also leads to lower levels of physical activity (Bao et al., 2021). In these and other settings, smaller indoor play areas and limited outdoor spaces can have a negative impact on overall health and well-being (Bento & Dias, 2017).

SES also affects play behaviors in ways that reflect families' social and economic circumstances. Children from higher SES backgrounds usually have access to a wider range of toys, materials, and structured activities. While there are clearly benefits to structured activities like recreational sports and educational toys, unstructured, imaginative play has clear benefits as well (Dankiw et al., 2020; Li et al., 2022; Tong Lee et al., 2020). Recognizing and valuing diverse play styles allows us to support children's development from multiple perspectives. It also fosters cross-cultural understanding and promotes a sense of belonging among all children.

Play and Differing Abilities

While mobility barriers often limit the play opportunities of preschool children with physical disabilities, active play improves their cognition, motor skills, balance, coordination, and overall physical fitness as it does for any child (Shields & Synnot, 2016). Active play also helps prevent obesity, a more common problem among children with physical disabilities (Walker et al., 2019).

Play provides opportunities for younger children with disabilities to interact with their typically developing peers and develop a sense of belonging. Yet it appears there are social barriers as well. Both parents and teachers report that preschool children with physical disabilities face challenges in engaging with their peers (Ebbers et al., 2021). To overcome this constraint, preschools can focus on early introduction of routine outdoor play, emphasizing both inclusive play spaces and inclusive activities that can take place there (Figure 5.28. Training preschool and kindergarten teachers in these practices will help integrate children with disabilities into everyday play activities, and changing the mindset of typically developing children and their parents is important for achieving more equity in social opportunities during play (Ebbers et al., 2021; James et al., 2022).

FIGURE 5.28 Public play spaces can be designed with all children in mind. (credit: modification of work "Accessible Playground sign, Cherryhurst Park" by "WhisperToMe"/Wikimedia Commons, CC0 1.0)

References

Bao, Y., Gao, M., Luo, D., & Zhou, X. (2021). Effects of children's outdoor physical activity in the urban neighborhood activity space environment. *Frontiers in Public Health, 9*. https://doi.org/10.3389/fpubh.2021.631492

Bento, G., & Dias, G. (2017). The importance of outdoor play for young children's healthy development. *Porto Biomedical Journal, 2*(5), 157–160. https://doi.org/10.1016/j.pbj.2017.03.003

Cordiano, T. S., Lee, A., Wilt, J. Elszasz, A., Damour, L. K., & Russ, S. W. (2019). Nature-based education and kindergarten readiness: Nature-based and traditional preschoolers are equally prepared for kindergarten. *International Journal of Early Childhood Environmental Education, 6*(3), 18–36. https://www.semanticscholar.org/paper/Nature-Based-Education-and-Kindergarten-Readiness%3A-Cordiano-Lee/12cd5a3e15f7b8831764e0e62ed94d887154b498

Dankiw, K. A., Tsiros, M. D., Baldock, K. L., & Kumar, S. (2020). The impacts of unstructured nature play on health in early childhood development: A systematic review. *PLoS ONE, 15*(2). https://doi.org/10.1371/journal.pone.0229006

DeLay, D., Hanish, L. D., Martin, C. L., & Fabes, R. A. (2016). Peer effects on Head Start children's preschool competency. *Developmental Psychology, 52*(1), 58–70. https://doi.org/10.1037/dev0000066

Dios Benítez-Sillero, J. D., Gea-García, G. M., Martínez-Aranda, L. M., Quartiroli, A., & Romera, E. M. (2022). Editorial: Social and personal skills related to physical education and physical activity. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.1077005

Ebbers, M., Boonzaaijer, M., Bolster, E. A. M., & Bloemen, M. A. T. (2021). Barriers, facilitators and solutions for active inclusive play for children with a physical disability in the Netherlands: A qualitative study. *BMC Pediatrics, 21*, Article 369. https://doi.org/10.1186/s12887-021-02827-5

Eggum-Wilkens, N. D., Fabes, R. A., Castle, S., Zhang, L., Hanish, L. D., & Martin, C. L. (2014). Playing with others: Head Start children's peer play and relations with kindergarten school competence. *Early Childhood Research Quarterly, 29*(3), 345–356. https://doi.org/10.1016/j.ecresq.2014.04.008

Einarsdóttir, J. (2011). Icelandic Children's Early Education Transition Experiences. *Early Education and Development, 22*(5), 737–756. https://doi.org/10.1080/10409289.2011.597027 Ernst, J., Burgess, E., & Bruno, L. (2021). Nature preschool as a promoter of physical activity in toung children: An exploratory study of nature preschool in a northern climate. *International Journal of Early Childhood Environmental Education, 8*(3), 3–19. https://naturalstart.org/sites/default/files/journal/4._final_ernst_burgess_and_bruno.pdf

Garvey, C. (1990). *Play*. Harvard University Press.

Ginsburg KR; American Academy of Pediatrics Committee on Communications; American Academy of Pediatrics Committee on Psychosocial Aspects of Child and Family Health. The importance of play in promoting healthy child development and maintaining strong parent-child bonds. Pediatrics. 2007 Jan;119(1):182-91. doi: 10.1542/peds.2006-2697. PMID: 17200287.

Global Recess Alliance, Ramstetter, C. L., Baines, E., Brickman, C. W., Hyndman, B., Jarrett, O., London, R. A., Massey, W., McNamara, L., Murray, R., & Rhea, D. (2022). Recess in the 21st Century post-COVID world. *The Journal of School Health, 92*(10), 941–944. https://doi.org/10.1111/josh.13235

Göncü, A. (1993). Children's development within social context: Research and practice in Turkey. In P. M. Greenfield & R. R. Cocking (Eds.), *Cross-cultural roots of minority child development* (pp. 173–191). Lawrence Erlbaum Associates.
Hedderson, M. M., Bekelman, T. A., Li, M., Knapp, E. A., Palmore, M., Dong, Y., Elliott, A. J., Friedman, C., Galarce, M., Gilbert-Diamond, D., Glueck, D., Hockett, C. W., Lucchini, M., McDonald, J., Sauder, K., Zhu, Y., Karagas, M. R., Dabelea, D., & Ferrara, A. (2023). Trends in screen time use among children during the COVID-19 pandemic, July 2019 through August 2021. *JAMA Network Open*, *6*(2), Article e2256157. https://doi.org/10.1001/jamanetworkopen.2022.56157
James, M. E., Jianopoulos, E., Ross, T., Buliung, R., & Arbour-Nicitopoulos, K. P. (2022). Children's usage of inclusive playgrounds: A naturalistic observation study of play. *International Journal of Environmental Research and Public Health*, *19*(20), Article 13648. https://doi.org/10.3390/ijerph192013648
Kahan, D., & Poulos, A. (2023). Models of school recess for combatting overweight in the United States. *Preventive Medicine Reports*, *31*. https://doi.org/10.1016/j.pmedr.2022.102081
Leisterer-Peoples, S. M., Ross, C. T., Greenhill, S. J., Hardecker, S., & M. Haun, D. B. (2021). Games and enculturation: A cross-cultural analysis of cooperative goal structures in Austronesian games. *PLoS ONE, 16*(11), Article e0259746. https://doi.org/10.1371/journal.pone.0259746
Li, P., Wu, T., Yang, F., Luo, H., Jiang, D., Mu, Y., & Xiong, T. (2023). Original research: Preschoolers' screen time in China before and during COVID-19 lockdown: A parental survey. *BMJ Paediatrics Open*, *7*(1). https://doi.org/10.1136/bmjpo-2022-001776
Li, S., Sun, J., & Dong, J. (2022). Family socio-economic status and children's play behaviors: The mediating role of home environment. *Children*, *9*(9). https://doi.org/10.3390%2Fchildren9091385
Lutkenhaus, P., & Thomsen, R. (2013). Inuit play in Canada and Greenland: A comparative study. In J. P. Lancy, D. Bock, & S. Gaskins (Eds.), *The Anthropology of Learning in Childhood* (pp. 127–146). AltaMira Press.
Pérez-del-Pulgar, C., Anguelovski, I., Cole, H. V., De Bont, J., Connolly, J., Baró, F., ... & Triguero-Mas, M. (2021). The relationship between residential proximity to outdoor play spaces and children's mental and behavioral health: The importance of neighborhood socio-economic characteristics. *Environmental Research*, *200*, 111326.
Nery, M., Sequeira, I., Neto, C., & Rosado, A. (2023). Movement, play, and games—An essay about youth sports and its benefits for human development. *Healthcare*, *11*(4), Article 493. https://doi.org/10.3390/healthcare11040493
Parten, M. B. (1932). Social participation among preschool children. *Journal of Abnormal and Social Psychology, 27*(3), 243–269. https://doi.org/10.1037/h0074524
Pérez-del-Pulgar, C., Anguelovski, I., Cole, H. V., De Bont, J., Connolly, J., Baró, F., ... & Triguero-Mas, M. (2021). The relationship between residential proximity to outdoor play spaces and children's mental and behavioral health: The importance of neighborhood socio-economic characteristics. *Environmental Research*, *200*, 111326.
Scott, H. K., & Cogburn, M. (2022). *Peer play*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK513223/
Scott, S., Gray, T., Charlton, J., & Millard, S. (2022). The impact of time spent in natural outdoor spaces on children's language, communication and social skills: A systematic review protocol. *International Journal of Environmental Research and Public Health*, *19*(19), Article 12038. https://doi.org/10.3390/ijerph191912038
Shields, N., & Synnot, A. J. (2016). Perceived barriers and facilitators to physical activity for children with disability: A systematic review. *BMC Pediatrics, 16*, Article 9. https://doi.org/10.1186/s12887-016-0544-7
Sims, M., & Hutchins, T. (2011). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics, 129*(1), e204–e213. https://doi.org/10.1542/peds.2011-2953
Stengelin, R., Ball, R., Maurits, L., Kanngiesser, P., & Haun, D. B. (2023). Children over-imitate adults and peers more than puppets. *Developmental Science, 26*(2), Article e13303. https://doi.org/10.1111/desc.13303
Stengelin, R., Hepach, R., & M. Haun, D. B. (2020). Cultural variation in young children's social motivation for peer collaboration and its relation to the ontogeny of Theory of Mind. *PLoS ONE*, *15*(11), Article e0242071. https://doi.org/10.1371/journal.pone.0242071
Telford, R. M., Telford, R. D., Olive, L. S., Cochrane, T., & Davey, R. (2016). Why are girls less physically active than boys? Findings from the LOOK longitudinal study. *PLoS ONE*, *11*(3), Article e0150041. https://doi.org/10.1371/journal.pone.0150041
Tian, X., Kidokoro, T., & Mwangi, F. M. (2021). Sociocultural dimensions of children's physical activity in contemporary pastoralist Maasai society. *International Journal of Environmental Research and Public Health*, *18*(6), Article 8337. https://doi.org/10.3390/ijerph18168337
Tong Lee, R. L., Lane, S. J., Yan Tang, A. C., Leung, C., Hang Kwok, S. W., Tak Louie, L. H., Browne, G., & Chi Chan, S. W. (2020). Effects of an unstructured free play and mindfulness intervention on wellbeing in kindergarten students. *International Journal of Environmental Research and Public Health*, *17*(15), Article 5382. https://doi.org/10.3390/ijerph17155382
Toppe, T., Hardecker, S., & M. Haun, D. B. (2019). Playing a cooperative game promotes preschoolers' sharing with third-parties, but not social inclusion. *PLoS ONE*, *14*(8), Article e0221092. https://doi.org/10.1371/journal.pone.0221092
United Nations. (1989, November 20). *Convention on the rights of the child*. https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child
Walker, M., Nixon, S., Haines, J., & McPherson, A. C. (2019). Examining risk factors for overweight and obesity in children with disabilities: A commentary on Bronfenbrenner's ecological systems framework. *Developmental Neurorehabilitation, 22*(5), 359–364. https://doi.org/10.1080/17518423.2018.1523241
Waters, G. M., Tidswell, G. R., & Bryant, E. J. (2022). Mothers' and fathers' views on the importance of play for their children's development: Gender differences, academic activities, and the parental role. *The British Journal of Educational Psychology*, *92*(4), 1571–1581. https://doi.org/10.1111/bjep.12520
Wiseman, N., Harris, N., & Downes, M. (2019). Preschool children's preferences for sedentary activity relates to parent's restrictive rules around active outdoor play. *BMC Public Health, 19*, Article 946. https://doi.org/10.1186/s12889-019-7235-x
Zamzow, J., & Ernst, J. (2020). Supporting school readiness naturally: Exploring executive function growth in nature preschools. *International Journal of Early Childhood Environmental Education, 7*(2), 6–16. https://files.eric.ed.gov/fulltext/EJ1254980.pdf

Key Terms

animism belief that objects are alive and possess consciousness
associative play children begin focusing on and engaging with another person while playing, such as by assisting one another
autobiographical memory memories of our individual life experiences and events
centration tendency for preoperational children to focus on one characteristic of an object or situation at a time
code-switching practice of alternating between two or more languages or language varieties within one conversation
conservation cognitive ability to understand that changing the appearance of a substance does not alter its mass, number, or volume
cooperative play children fully engage in both a play partner and the activity
dyspraxia developmental coordination disorder in which children have difficulty executing typical movements
egocentrism preoperational children's tendency to have limited logical reasoning abilities because they perceive things from only their own point of view, according to Piaget's stage theory of cognitive development
false belief children's belief that other people have the same knowledge they themselves possess
fine motor skill precise movements of the hands and fingers
food desert geographic area where fresh food is not readily available
gross motor skill large body movements of the head, torso, arms, and legs
literacy ability to read, write and understand information
macronutrients nutrient-rich carbohydrates, proteins, and fats needed for energy
night terrors intense fear or terror that occurs during deep sleep
onlooker play children observe others at play but do not become physically involved
operation logical and reversible mental action
parallel play children engage in similar play in close proximity but still play separately
pragmatics social cues learned in language
preoperational stage stage in which children begin to represent their thoughts and ideas using symbols such as words and images; the second stage in Piaget's stage theory of cognitive development
scaffolding process of providing temporary learning support when tasks are just outside a person's range of ability
semantics a feature of language concerned with meaning and logic
sociocultural theory of cognitive development theory of development proposed by Vygotsky that emphasizes the role of social and cultural factors on individual cognitive development
solitary play (also, independent play) children play alone focusing on their own activity
stunting impaired growth in height, often due to malnutrition
symbolic representation representation of thoughts and ideas using symbols, such as words and images
syntax rules used in language to construct full sentences
theory of mind awareness that our beliefs and perspectives are different from other people's
unoccupied play children observe their environment and perform random movements
zone of proximal development (ZPD) range of activities that cannot be completed alone but can be accomplished with the aid of a more skilled adult or peer

Summary

5.1 Physical Health and Growth in Early Childhood

- After rapid growth during infancy, physical growth in early childhood slows and becomes relatively consistent. Average height and weight differences between girls and boys are only minor in early childhood. The brain continues to grow at a rapid pace, due to overproduction of synapses as well as

stimulation and increased myelination.
- A healthy balanced diet is essential to optimal growth. Poor nutrition can have lifelong consequences.
- Proper sleep is necessary to maintain health. Less-than-optimal sleep during early childhood is associated with overweight and obesity and may have indirect effects on other health issues in later life.
- Vaccinations are an essential instrument against childhood illness and mortality. Accidents pose the biggest health risk to preschool children. Threats to their safety vary by the area of the world in which they live.

5.2 Motor Development and Physical Skills in Early Childhood

- Understanding milestones in motor development helps us understand typical growth and design appropriate interventions when problems arise.
- Children who engage in regular physical activity show enhanced cognitive development, including improved attention, self-regulation, and academic performance.
- Children who are three and four years old should spend a minimum of three hours per day in a variety of physical activities, including at least sixty minutes of moderate intensity. Five- and six-year-olds should participate in a minimum of sixty minutes of moderate- to high-intensity activity every day.
- Children who have physical disabilities often face obstacles and misconceptions in pursuing activities that facilitate movement.
- Few overall differences exist between girls' and boys' abilities in early childhood, and they are insignificant compared to those among all boys and among all girls.

5.3 Cognition in Early Childhood

- The stage theory of cognitive development and the sociocultural theory of cognitive development share the view that children actively construct their understanding of the world through their experiences.
- Stage theory asserts that children acquire knowledge through their independent exploration of the environment, while sociocultural theory contends that social interactions and cultural influences play a more significant role in development.
- The information processing model suggests that cognitive development is an ongoing process of quantitative changes that rely on a feedback loop.
- Research into learning by observation and "pitching in" add important and complementary elements to the study of cognition in early childhood by demonstrating the ways children learn through environmental experiences with others.

5.4 Language in Early Childhood

- Every language has unique characteristics that children must learn. These include phonemes, morphemes, semantics, syntax, grammar, and pragmatics.
- Studying language provides a way for us to investigate cognitive processes as well as a way to understand activities related to communication and social interaction.
- Deaf children can acquire sign language, and young children can learn multiple languages in the same manner and with the same skill as their primary languages.
- Early literacy predicts later academic success.

5.5 Play in Early Childhood

- Play is essential for children's cognitive, physical, and psychosocial development and complements peer learning.
- Mildred Parten observed that play progresses through six stages of non-social and social play.
- Types of play vary by culture, community, and location, and all children should be afforded equal opportunities to play.
- Socioeconomic status affects the availability of play resources and the way children play but does not necessarily result in negative physical, cognitive, or psychosocial outcomes.

- Children with disabilities often face mobility barriers that limit opportunities for play. Early intervention programs and enhanced teacher training can help facilitate their development.

Review Questions

1. What is a cause of stunting in children?
   a. prenatal exposure to lead
   b. poor sleep
   c. inadequate nutrition
   d. maternal stress

2. Where are food deserts most frequently found?
   a. in lower-income inner-city and rural areas
   b. Pacific Northwest in the United States
   c. throughout major parts of Asia (the Gobi Desert) and Africa (the Sahara)
   d. in farming areas with restricted water supplies

3. For how many hours does the average preschool child sleep in a 24-hour period?
   a. 7–8 hours
   b. 9–10 hours
   c. 10–13 hours
   d. 13–15 hours

4. Sports equipment, open spaces, and playground structures should be available in early childhood to facilitate the development of _____.
   a. gross motor skills
   b. cephalocaudal growth
   c. fine motor skill development
   d. right handedness

5. The improvement in motor skills typically observed during early childhood are facilitated by an increase in
   a. the branching of dendrites
   b. the number of neurons
   c. myelination of neural axons
   d. branching of axons

6. What physical activity recommendation does the World Health Organization make to ensure good overall development in children between three and four years of age?
   a. three hours a week of aerobic activity that keeps the heartrate above 120 beats per minute
   b. two hours of activity for every one hour of sedentary behavior, with that activity a mixture of aerobic and anaerobic tasks
   c. three hours of moderate activity for every one hour of sedentary behavior, with an emphasis on anaerobic tasks
   d. three hours per day in a variety of physical activities, at least sixty minutes of moderate intensity

7. What does research recommend about the way children, regardless of individual or group differences, should be supported in motor behavior?
   a. All children, regardless of sex or physical disability differences, should be equally provided with opportunities and support for motor development.
   b. Motor behavior developmental support should be provided less for children with physical disabilities

than for children without them to avoid developing reliance on extra assistance.
c. Girls should receive more support in gross motor activities and boys should receive more support in fine motor activities to make up for biological differences.
d. All children, regardless of sex or physical disability differences, can develop without support for motor behavior because it will happen automatically.

8. As a new kindergarten teacher, you have a classroom full of children between five and six years of age. What similarities or difference ranges should you expect from the children's cognitive milestones?
a. low achievements in math and a wider range of language abilities
b. a wide range of skills in all cognitive areas
c. high achievement in all areas
d. similar achievements in language and a wider range of math abilities

9. Children at the beginning of Piaget's second stage of cognitive development children are thought to _____.
a. engage in sophisticated abstract thought
b. rely on sensory information and motor movement to learn about the world
c. think in an increasingly logical way that emphasizes tangible objects
d. lack logical and reversible mental actions known as operations

10. In contrast to Piaget's stage theory of cognitive development, what does the information processing theory say about cognition?
a. Cognition shows smooth quantitative development.
b. Cognitive capacity is somewhat limited and predetermined at birth.
c. Cognition shows specific qualitative changes.
d. Cognition has certain environmental limits.

11. The sociocultural theory of cognitive development views cognitive development as a continuous process centered on a child's _____.
a. inherited capabilities
b. social and cultural influences
c. stages of psychosocial development
d. grasp of centration and conservation

12. In contrast to Vygotsky's sociocultural view of cognitive development, what does Piaget's stage theory assert is the most significant factor in acquiring the necessary skills to begin formal schooling?
a. maturation
b. values
c. culture
d. socialization

13. According to research conducted by Hart and Risley, how can families increase their children's language skills?
a. by having children watch more children's television programs
b. by talking to children more frequently
c. by providing more stimulating toys
d. by serving more nutritious meals

14. What are the smallest units of language that have meaning?
a. syntaxes

b. phonemes
c. morphemes
d. modifiers

15. What appears to be the most important environmental variable in the development of language in children?
a. parents' marital status
b. family income level
c. a language-rich environment
d. cerebral volume

16. What has been learned through research on children who do not receive typical language stimulation during early childhood, such as the case of Genie?
a. Language development is most important to pursue after children begin speaking at around one year old.
b. Language development is most important to pursue after children begin speaking in sentences at two years of age.
c. With enough stimulation, optimal language development can occur even if it begins during the teenage years.
d. Language exposure throughout infancy and early children is essential for optimal language development.

17. What characteristic is shared by semantics, syntax, and pragmatics?
a. They strongly affect cognitive and socioemotional development.
b. They strongly affect cognitive, socioemotional, and physical development
c. They strongly affect cognitive and physical development
d. They strongly affect physical and socioemotional development

18. What play differences should be recommended for children based on their gender identity or sex assigned at birth?
a. None; all genders and sexes benefit from play in similar ways.
b. More physical play should be recommended to boys than to girls.
c. More imagination play should be recommended to girls than to boys.
d. Children should only play in same-gender or same-sex groups until adolescence.

19. Play in early childhood primarily promotes what aspect(s) of development?
a. physical development
b. physical and psychosocial development
c. physical, cognitive, and psychosocial development
d. physical and cognitive development

20. What type of play requires that children fully engage with both the activity and the person they are playing with?
a. associative play
b. parallel play
c. cooperative play
d. solitary play

21. In what type of play do children play separately from each other but engage in similar activities?
a. associative play

b. parallel play
c. solitary play
d. unoccupied play

Check Your Understanding Questions

22. When explaining differences between the physical size of preschool boys and girls, what does it mean that "the variance within each sex is much larger than any variance between the sexes"?

23. Why is it important to identify cases of stunting, a physical attribute that cannot be reversed?

24. Explain the connection between environment and brain growth. That is, what kinds of experiences are important to typical versus individual brain growth?

25. Explain why physical development may not be optimized if physical activities are limited during early childhood.

26. Describe advancements in gross motor and fine motor movements that arise during early childhood.

27. Name three cognitive milestones typically first observed during early childhood. Identify some reasons they might be enhanced (and observed) sooner or delayed.

28. What is the difference between Piaget's idea that individuals construct their own knowledge and Vygotsky's model of social constructivism?

29. Name and define the features of language. Provide an example of at least one feature.

30. Explain the importance of environmental influences on a child's language development. Identify at least one specific feature of an optimal learning environment.

31. Describe how studying language development can help improve our understanding of children's cognitive development.

32. Differentiate between parallel play and cooperative play.

33. Describe at least two developmental benefits of play in early childhood.

Personal Application Questions

34. Reflect on your childhood diet. Were there any specific foods or eating habits that were emphasized in your household? How might these have contributed to your physical health and growth during early childhood?

35. Consider your childhood sleep habits. How consistent was your sleep schedule, and what role did it play in your overall health and daily functioning? How do you think your sleep patterns as a child have influenced your current sleep habits?

36. Think about a skill you developed as a child, such as riding a bike, drawing, or playing a musical instrument. How did practice and repetition contribute to the development of your fine or gross motor skills? Reflect on the importance of these skills in your current life.

37. Consider how movement and physical activity influence your cognitive abilities, such as focus, memory, and problem-solving skills. Reflect on a time when regular physical activity either positively or negatively impacted your cognitive functions. How might these experiences inform how you approach physical activity for young children in your life?

38. Think about how Piaget's theory of cognitive development might explain your cognitive processes as a child. Or, alternatively, think about observed cognitive processes in another child. Can you identify a few specific childhood experiences that aligns some of Piaget's concepts (e.g., centration, seriation,

conservation, egocentrism, animism, pretend play)? Describe the experience and explain how it fits into Piaget's cognitive development theory.

39. Compare your early learning experiences with both Piaget's and Vygotsky's theories. How do both theories explain your own cognitive development? Provide examples from your early childhood to support your comparison.

40. Think about a child you know who is currently in the early childhood stage (ages 3–6). Observe their language use and compare it to your own memories of language use at that age. What similarities and differences do you notice? How do you think their environment and experiences are shaping their language development?

41. Consider a time when you learned a new language or significantly expanded your vocabulary. How did your learning experience compare to what you now understand about language development in early childhood? Reflect on the strategies that were effective for you and how they align with theories of language acquisition.

42. Reflect on your own experiences with play during early childhood. What types of play did you engage in most frequently (e.g., pretend play, physical play, games with rules)? How do you think these play activities contributed to your development in areas such as creativity, problem-solving, and social skills?

43. Consider a time when you observed a young child at play, either recently or in the past. How did their play behaviors align with what you have learned about the importance of play in early childhood? What developmental benefits did you notice, and how did the child's environment support or hinder their play?

44. Think about how your play experiences in early childhood differed from those of children today. How have changes in technology, societal expectations, and available resources influenced the types of play children engage in now? Reflect on whether these changes have had a positive or negative impact on children's development.

Essay Questions

45. Analyze the factors that influence brain development during early childhood. Consider the roles of nutrition, sleep, stress, and exposure to stimulating activities. How do these factors contribute to cognitive and emotional development? Use examples from the text to illustrate your points. Based on this evidence, as a pediatrician, what recommendations would you make to parents who wish to ensure optimal cognitive and physical development for their child?

46. Imagine you are responsible for designing a playground or a physical education program for young children. How would you ensure that it supports both gross and fine motor development? Consider the needs of children with different abilities and backgrounds in your design. What specific features or activities would you include to promote inclusive motor development?

47. Describe the typical cognitive milestones that children reach during early childhood. How do these milestones contribute to a child's overall development? Use examples from the text to support your analysis. Finally, discuss how knowledge of such milestones impacts a preschool or early elementary teacher's instruction and curriculum planning.

48. Imagine you are designing a language enrichment program for children in early childhood. Based on your knowledge and personal experiences, what activities would you include to promote language development? How would you ensure these activities cater to different types of learners, including those who are hearing impaired or have other diverse needs?

49. Imagine you are designing a play-based learning environment for preschool-aged children. Based on your reflections and what you have learned, what key elements would you include to ensure that the environment promotes physical, cognitive, and social-emotional development? How would you address

the needs of children with different abilities and backgrounds in your design?

Social and Emotional Development in Early Childhood (Ages 3 to 6)

6

FIGURE 6.1 Preschool children learn through interaction with each other and their environments. (credit: modification of work “kindergarten children 04” by “mstk east”/Flickr, CC BY 2.0)

CHAPTER OUTLINE

6.1 Social and Emotional Development in Early Childhood
6.2 Identity in Context: Gender Development and Racial Identity in Early Childhood
6.3 Families as Context in Early Childhood
6.4 Social Contexts: Peers, Play, and Friendship in Early Childhood
6.5 Media Exposure and Literacy in Early Childhood

WHAT DOES PSYCHOLOGY SAY? Seyoun has noticed a difference in her son Hwan since he started attending a local preschool. Once friendly and forthcoming, Hwan has become more hesitant around other preschoolers, almost nervous of the other children, though he still seems happy to play with them when they approach him.

Given that she and her parents are immigrants, Seyoun wonders whether speaking Korean at home or being among the few Asian Americans in her neighborhood has influenced the way Hwan sees himself. She also wonders how living with his grandparents, who are stricter and more old-fashioned than other families in their neighborhood, has influenced Hwan’s perceptions of relationships and communication with others.

Hwan’s self-conscious behavior has some benefits. He seems especially receptive to initiation from other children and can play cooperatively when others lead the way. Seyoun notices that her son is also less aggressive than some of the other children she meets, and she wonders whether that behavior is associated with her minimizing his screen time and access to violent cartoon shows.

Seyoun has several questions about this stage of development:

- How can she tell whether Hwan's emotional development is on track and healthy?
- When will Hwan develop an understanding of his racial or ethnic identity?
- Should a shy child be encouraged to take the initiative in social interactions more often?
- Does Hwan need more time with peers or more time with family?

This chapter will help you explore the social and emotional world of preschoolers, children aged 3 to 6.

6.1 Social and Emotional Development in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain Erikson's third stage of psychosocial development: initiative versus guilt
- Identify achievements in development of the self and self-knowledge
- Identify developmental achievements in emotional regulation
- Describe the changing social environments of early childhood and key achievements in social development

Meghan is three years old and her family enjoys seeing her change as she grows, Meghan is starting to approach other kids and initiate play and make friends. It's exciting to see her introduce herself and talk about herself to new people, often saying, "Hi, I'm Meghan. I'm this old!" as she holds up three fingers.

When Meghan faces new challenges, like getting dressed or climbing into her car seat, she takes a big breath and focuses. Her family isn't sure where she learned this technique, but it helps her with persisting at the task. When she succeeds, she smiles knowing that she has achieved a new skill.

Her family hopes that Meghan will continue to be confident and outgoing as she gets older, but they're concerned. They've seen her older cousins become more self-conscious and withdrawn as they grow, and they wonder whether Meghan will too. This section discusses how emotional and social skills develop during early childhood by considering children's ability to reflect on themselves, regulate their emotions, and respond to new experiences (Figure 6.2).

FIGURE 6.2 Young childhood can be filled with confidence, joy, and pride in achievements. (credit: "happy child" by Rose Spielman/Flickr, CC BY 4.0)

Psychosocial Theory of Development: Initiative versus Guilt

Early childhood is a time when socializing becomes a bigger focus. Interacting with other children, with siblings, and with adults takes on new meaning and purpose. According to Erik Erikson's theory of psychosocial development (1950), early childhood is the time when children navigate the unconscious conflict of **initiative versus guilt** (Erikson, 1985). This third stage of psychosocial development focuses on acquiring the self-confidence to reach out to others for help or social connection, as well as achieving the ability to do more things independently. It also builds on the previous stages: trust versus mistrust in infancy, and autonomy versus shame/doubt in toddlerhood. At this stage, children may begin to take initiative by asking to do things themselves. For example, they may want to pour their own juice or pick out their own clothes.

As preschoolers and young children begin to play and interact with others, some experience encouragement, success, and joy in taking the lead. Sharing toys, inviting others to play, and seeking out peers to spend time with might be rewarded by other children and onlooking adults through smiles or praise. When young children feel confident approaching others, they may develop a sense of initiative and feel comfortable leading and starting play interactions with others. A young child who experiences barriers in their interactions with others, such as being rejected by other children or discouraged by adults, or who feels shy or nervous, may develop a sense of guilt in these interactions (Sette et al., 2019). If children are taught that it is rude to initiate or approach others first, they may become wary and unsure of how to begin social interactions, and instead wait for others to come to them. Whether a young child develops a sense of initiative or of guilt will influence the way they view themselves and others, as will others' emotional expressions and social dynamics (Luby et al., 2009).

Caregivers can help to facilitate positive development towards initiative by attending to and responding to children's interests and desires for social connection. For example, if a five-year-old asks to play with a friend but it's a busy week, the caregiver could reassure the child that they can have a playdate next week and follow through in arranging the event. This will help the child feel more confident in their ability to seek out social opportunities. Similarly, if a child is struggling to figure out how to use their new car seat, empowering them to take responsibility and learn how to get situated alone will promote initiative. In contrast, criticizing them for taking too long might increase their feelings of guilt. So if they ask to pour their own juice, let them, but maybe have a towel handy in case of messes: after all, it's all part of learning and growing.

Self Development and Personality

At about age three, young children do not yet have a strong sense of self. Although they can identify themselves in mirrors and photos, their self-concept is limited (Harter, 1999). The term **self-concept** refers to an abstract, cognitive idea of who you are, including all the beliefs you have about yourself. Typically, a self-concept for a three-year-old will include basic vital facts such as their name, gender, and age, and perhaps their relation to another person, such as an older sibling. In comparison, an eight-year-old will often include evaluative components such as hobbies they are good at, and psychological components such as personality traits.

Around age four, children may start to include new information in their self-concept, such as their interests and hobbies. One child may say they like Batman and coloring books, whereas another may mention dancing and the color yellow. However, at age four, these components are based on concrete, factual statements and are not evaluative. Starting around age five or six, some children might start to evaluate their skills internally, but expressing this view outwardly as part of their self-concept is still rare and will usually start later in childhood (Putnick et al., 2020).

Although young children may not have the skills to reflect on and articulate their psychological individuality, their uniqueness is obvious to others. Biologically-based patterns of behavior, known as temperament, can describe individual characteristics in a newborn, infant, and toddler (refer to 4.2 Temperament and Personality in Infants and Toddlers). Often, temperament refers to outwardly observable actions, such as activity level, sensitivity, perceived emotional intensity, and perseverance (Goldsmith et al., 1987) (Figure 6.3).

Some young children prefer to sit quietly and work on puzzles, look at picture books, and avoid novel situations and loud places. Other preschoolers might prefer active play such as playgrounds and tumble mats, and may enjoy meeting new people and trying new food.

(a)

(b)

FIGURE 6.3 In early childhood, some preschoolers (a) prefer to stay close to their caregivers and keep to familiar places, (b) while others are happy to run and explore. This is just one way in which temperament can be diverse in early childhood. (credit a: modification of work "sweetie pie" by Jeremy King/Flickr, CC BY 2.0; credit b: modification of work "Kids running across the bridge" by freestocks.org/Flickr, Public Domain)

By age five, elements of **personality** begin to emerge. In contrast to temperament, personality contains more internal attitudes, cognitions, and preferences. Personality traits are also stable characteristics that appear across contexts. They are measured on a continuous spectrum, meaning it's possible to be high, medium, or low on any trait. Personality traits that appear in early childhood include components of the Big Five Factors (Figure 6.4). These five traits are openness, conscientiousness, extraversion, agreeableness, and neurotocism (Slobodskaya, 2021).

- Openness is a measure of someone's imagination and novelty-seeking behavior.
- Conscientiousness is the ability to pay attention and persist, and the desire for routines.
- Extraversion is the degree to which someone is either outgoing or withdrawn.
- Agreeableness is the tendency to comply and seek to please others.
- Neuroticism describes emotional stability, reactions, and range of emotions displayed.

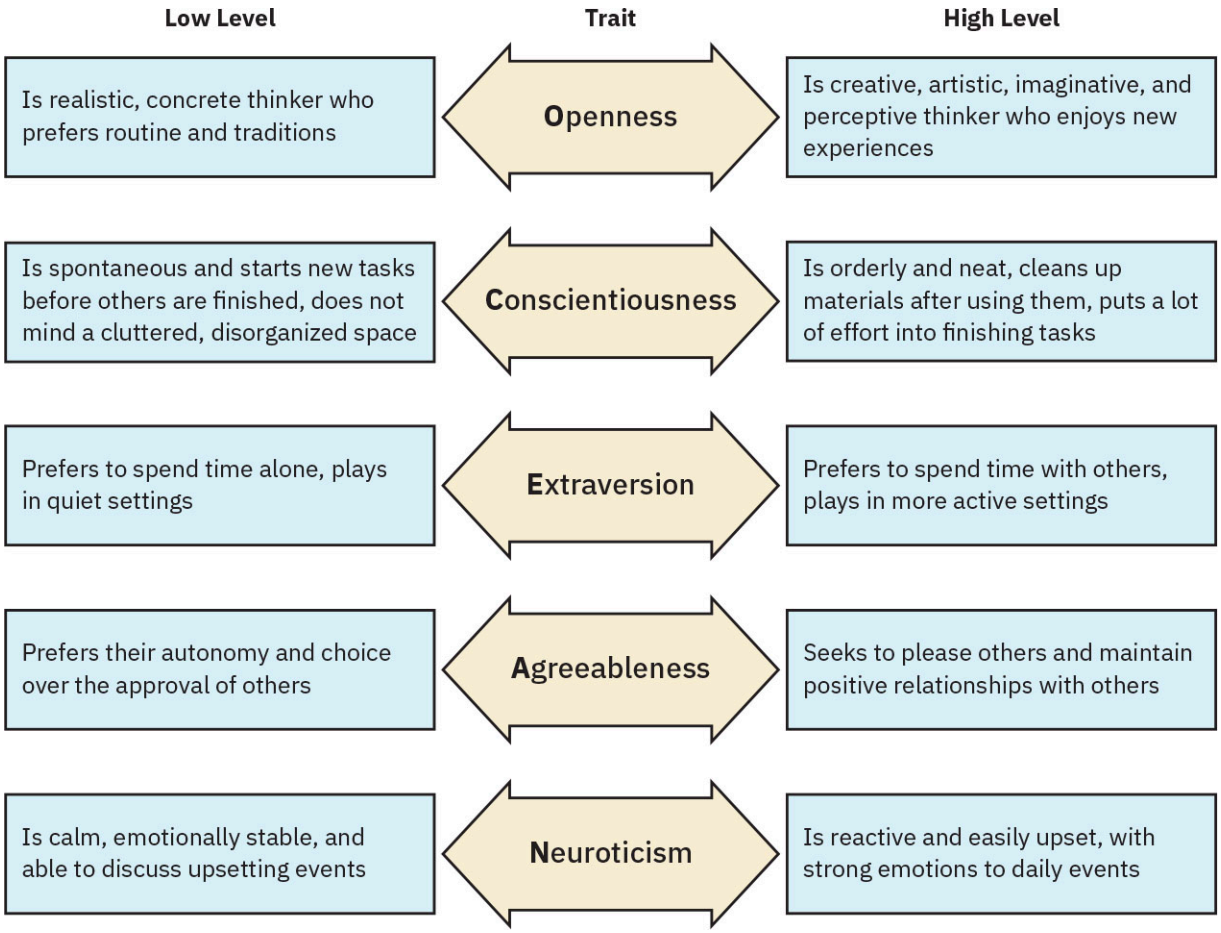


FIGURE 6.4 The Big Five is a measure of the personality factors of openness, conscientiousness, extraversion, agreeableness, and neuroticism present across the lifespan (Donahue, 1994; Measelle et al., 2005, Slobodskaya 2021). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Children at this age are just beginning to develop a stable personality. This means their personality behaviors may shift between high, low, and moderate levels based on their environment and context (Roberts & DelVecchio, 2000). For example, a child may appear moderate in extraversion overall because they are outgoing and outspoken at times, and shy and quiet at other times. A child who is moderate in conscientiousness may be neat and organized at times but careless and messy at other times.

LINK TO LEARNING

What is your personality type? Online quizzes of the Big Five Factors are fairly popular and are different from entertainment-only personality quizzes. You can try this shortened version of the Big Five Personality Test (https://openstax.org/r/104BigFive) to learn more about your personality.

Emotional Development

Along with understanding *who* they are, young children begin to assess *how well* they perform certain tasks and skills at around ages three and four. By this point, most young children base their self-esteem on the feedback they receive from their parents and caregivers. The term **self-esteem** refers to a personal evaluation of the self, expressing whether you hold yourself in high regard or feel critical about yourself. Children who experience love, support, and encouragement from their parents tend to develop relatively high levels of self-esteem in early childhood. Two important factors in the development of self-esteem are social comparisons and self-conscious emotions.

Social Comparisons

High self-esteem influences the way young children make **social comparisons**: that is, the way they evaluate themselves in comparison to others. When asked whether they perform better than, worse than, or about the same as other children when it comes to running, coloring, singing, or dancing, most four-year-olds rate themselves as performing better than others (Marsh et al., 2002; Orth et al., 2018). The reason is that at four years of age, most children are not yet able to fully consider the performance of others to make objective comparisons. Instead, they are most familiar with their own perspective and performance, and being satisfied with their abilities, they rate their own skills highly.

Around five years of age, children start to become more self-conscious and are better able to evaluate and assess the way they are perceived by others. In many countries, including the United States, this coincides with the beginning of formal education. In a school setting, children may start to notice that some children are better at different activities, and perhaps they themselves are not the fastest or the best at everything. In the first year of formal education, children tend to experience an adjustment to their self-esteem, leading them to place less reliance on praise from parents and more on the social comparisons they make with other children (Pinto et al., 2015). It is typical to see self-esteem decline a little in the first year of formal education as children begin to have more realistic perceptions of themselves. For example, they may transform from believing they are "the highest jumper ever" to observing that they jump about as high as their peers in physical education class.

Self-Conscious Emotions

The development of new self-conscious perceptions around age five is accompanied by more mature self-conscious emotions. Although toddlers may experience guilt, shame, and sympathy, young children begin to display and express these emotions in culturally appropriate ways. For instance, parents in some regions of Nepal ignore their children when they display shame, whereas other Nepali parents respond with support and help. Children in these areas learn from parental behavior, and this influences future displays of this emotion (Cole et al., 2006). Girls in Hungary are less likely than boys to receive encouragement from their mothers to feel and display pride, which may decrease future expressions of pride in girls (Poharnok & Lang, 2021).

Moreover, early childhood is a time when children start to think about their emotions and reflect on them. Thinking about our internal emotional state is an aspect of **metacognition**, or thinking about thinking, including about our memory, cognition, and emotions. Reflecting on a behavior that made us feel guilty, dwelling on how nervous we are around others, and considering the way a friend's struggle is making us feel are all new experiences in early childhood.

These self-conscious emotions are aided by improved **self-regulation**, which is the ability to lower our emotional arousal and control our emotional reactions. In infancy and toddlerhood, self-regulation typically requires assistance from a caregiver to help redirect attention, relax, and lower arousal (Boyer, 2023). However, by early childhood, children are starting to experience neurological maturity, which aids in the development of new social and cognitive skills, including the ability to self-regulate. For example, a preschool-age child with strong self-regulation skills is likely to use words to describe their feelings rather than have a tantrum, and to ask for help when they need support with a challenging task.

The ability to consider long-term goals in addition to short-term pleasure is called **impulse control**. A particular early childhood milestone in impulse control, achieved between ages three and six, is the ability to delay urges and desires. In one classic study, a single marshmallow was placed in front of children who were told they could eat the sweet immediately or wait until a researcher returned, in which case they could have two marshmallows. Although most three-year-olds ate the candy immediately, most of the six-year-olds were able to control their desire and double their reward (Mischel, 2014). Self-regulation and impulse control rely on many cognitive skills, such as controlling and directing our attention, planning and identifying goals, using our working memory, and applying calming coping techniques (McClelland & Cameron, 2011). Although these

competencies are interrelated, it is possible for a child to be further along in their development of some and lagging in others (Montroy et al., 2016). In other words, all children will develop these skills on their own individual schedule, and being strong in one skill does not guarantee having strength in another.

LINK TO LEARNING

The Marshmallow Test emerged decades ago as a developmental test of self-regulation and impulse control in psychology. Watch this brief video that showcases how the Marshmallow Test works (https://openstax.org/r/104Marshmallow) to learn more.

Along with regulatory skills, social skills also foster improved impulse control in early childhood. Children who are better able to understand the perspective of others, anticipate the needs of others, feel empathy, and communicate effectively are often better able to make the social compromises and negotiations required when playing games with others (Robson et al., 2020). Taken together, all these skills are considered to be components of **emotional intelligence**, or the ability to understand and react appropriately to the emotions of ourselves and others (Table 6.1).

Skill	Example
Attentional control	Looking away or walking away from something that is tempting or irritating, to decrease desire or irritation. Coping strategies can include distractions such as using fidget toys, twirling hair, and wiggling toes.
Calming of emotions	Breathing deeply, stretching, closing eyes to calm down and lower the level of emotionality, counting to ten, taking a drink of water, and using muscle relaxation.
Planning and goal-directed behavior	Focusing on a future goal to stay on task by completing a chore, complying with a rule, or avoiding distractions.
Perspective-taking	Understanding the desires, wants, and motivations of other people.
Empathy	Feeling the affective emotional state of others and offering consolation and comfort.
Assertive communication	Being able to communicate needs, desires, and struggles to ask for assistance and help.

TABLE 6.1 Regulatory and Interpersonal Skills in Early Childhood

Parents and other caregivers can play an essential role in promoting emotional intelligence and emotion regulation in children. Adults can model and encourage healthy development through **emotion coaching**, which supports emotion development, rather than by dismissing or disapproving. Emotion coaching strategies include: paying attention to and recognizing a child's emotions and emotional expressions as learning opportunities, listening to and validating their emotions with empathy and kindness, and helping children identify and regulate their emotions (Gottman, 2024). In contrast, emotion-dismissing and emotion-disapproving approaches dismiss, deny, or are negatively judgmental of a child's emotions, which can lead children to struggle with developing healthy emotion regulation. All in all, emotion coaching parenting techniques have been shown to promote higher emotional competence in children (Perry et al., 2020).

IT DEPENDS

Does Inhibition Correlate with School Success?

FIGURE 6.5 Marshmallows are a tempting treat. Would you be able to resist if you were left alone with a sweet confection? (credit: "ksenia-yakovleva-HQ" by Ksenia Yakovleva/Flickr, Public Domain)

You may have heard about the famous 1970 marshmallow test conducted by Mischel and colleagues. In this test, researchers placed one marshmallow in front of a young child and then left the room. Children were given two options: eat the marshmallow right away, or wait until researchers returned and be rewarded with a second marshmallow. The researchers found that younger children were more likely to gobble up the sweet immediately, but older children were more likely to be patient and let their reward double. This finding speaks to the development of inhibitory control.

But as charming as the original study was, its findings were soon taken out of context and over-generalized. Theorists wondered whether children who were more patient would go on to have more self-control and self-discipline in other aspects of their life. Interpretations of the data and the findings were used to suggest that children who waited for the second marshmallow would be more successful in school, at work, and even in relationships. In 2018, a group of scientists re-examined the long-term outcomes of the so-called marshmallow effect and found much smaller and insignificant correlations between delay of gratification and later outcomes (Watts et al., 2018).

More recently, a group of researchers compared these studies and found that while delay of gratification was positively correlated with later achievement, the reality is much more complicated (Falk et al., 2020). The choice of eating the marshmallow right away or waiting was much less closely associated with later developmental outcomes. What's potentially more important is to consider the dynamic environment the child experiences, which includes other factors that promote achievement and self-regulation such as family background and early cognitive ability. Fifty years after the first study, these misinterpretations have been corrected. So if you are tempted, just go ahead and eat the marshmallow!

Social Development

A young child's emotional development doesn't take place in the absence of outside influence. As you recall from Bronfenbrenner's ecological model in 1.4 Contexts and Settings of Development, children are embedded within family systems, communities, cultures, and geographical regions. As they grow from three to six years of age, their social domain becomes increasingly complex, with more interactions with peers, extended family, daycare and preschool settings, and media such as television, music, and personal digital devices.

Family structures that provide space for emotional expression and growth can help to foster positive emotionality and resilience. Children who develop a sense of confidence and pride are more likely to engage in group play behavior with their peers, and to have a healthy outlook on relationships. In comparison, children who experience neglect, abuse, or discouraging home environments may be more likely to be timid, unsure, or aggressive around other children, and they may face further discouragement and discipline in preschool settings (Sette et al., 2017).

However, an optimal family environment depends on many factors, such as cultural values, parents' skills and

personalities, and children's personalities. As mentioned in 4.2 Temperament and Personality in Infants and Toddlers, goodness of fit is the degree to which a child's temperament and skills match their environment. A loud, active, and argumentative child may flourish in a home in which parents encourage healthy debate and banter, whereas a quiet, sensitive, and introverted child may thrive in a quiet home with parents who nurture their needs with gentleness.

Social Emotional Development and Autism Spectrum Disorder

Social and emotional development in early childhood tends to follow some common trends. However, these trends are not universal, and the many exceptions include the developmental trajectory of children who experience neurodiversity: that is, who have a brain that works differently. The term **neurodiversity** describes any psychological, emotional, cognitive, or sensory experience that is different from that of the majority. Children who are deaf, hard of hearing, blind, or visually impaired are considered neurodiverse. Language delays, movement and motor delays, and intellectual disability are also examples of neurodiversity. One group of neurodiverse preschool children who may struggle with social initiation in preschool years are those with autism spectrum disorder (Skoufou, 2019).

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by "persistent deficits in social communication and social interaction" and "restricted, repetitive patterns" of behavior (American Psychiatric Association, 2022). ASD occurs in around 17 percent of children and can manifest with a wide range of highly diverse symptoms and neurological characteristics (Centers for Disease Control and Prevention, 2024). The average age to receive a diagnosis is 4.5 years old, though many individuals are diagnosed at later ages, including in adulthood (Brett et al., 2016).

Some of the common traits that appear in early childhood are struggles with social interactions, particularly making eye contact, responding reciprocally, understanding the perspectives of others, and communicating verbally. These noticeable differences in social interactions among autistic preschoolers often result in parental concerns and referrals to specialists (Figure 6.6). Note that most psychologists use the phrase *autistic preschooler* (identity-first language) as opposed to *person with autism spectrum disorder* (person-first language) because a large percentage of allies and advocates in the autistic community have stated this language preference. The language and preferences for any neurodiversity or disorder vary by the individual and the represented community. When in doubt, always follow the lead of the person or ask their preference (Autistic Self Advocacy Network, n.d.; Ladau, 2021).

FIGURE 6.6 There are many possible signs of autism spectrum disorder, and the appearance of some does not imply ASD is present. However, early signs may warrant a referral to a specialist for professional assessment. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Consider Leo. He was three years old when his parents first noticed something was different about him. Though he reached all the early infant and toddler milestones as expected, he never really learned to speak, preferring to make expressive noises and use nonverbal body movements. In addition, he had become fascinated with analog clocks and watches. He would stare at the large grandfather clock in the hallway for long periods of time. Most recently, Leo has started to understand daily routines, and desires a rigid routine based on the clock. When it reads seven o'clock, Leo will pull his mom to his bedroom and groan and insist on being put to bed—sometimes when it's 7 a.m. and not 7 p.m.

However, the behaviors and characteristics often associated with autism may be better explained by other conditions. For instance, a young child who focuses intensely on their toy trucks and prefers to play alone and with the same truck toys each day might simply be a young mechanic in the making. Another child who struggles with basics of language such as tone, pronouns, and sarcasm might be learning English as a second language or have a language processing disorder. Finally, a child who does not want to be touched, talk about their feelings, or tell stories might be shy, socially withdrawn, or reacting to certain cultural expectations. Parents should always refer to specialists rather than making their own diagnosis.

INTERSECTIONS AND CONTEXTS

Supporting Neurodiversity

Autism spectrum disorder is often first diagnosed in early childhood, and many families struggle to access resources, assistance, and interventions to help their children better cope and navigate the world around them. For more than 60 years, the leading approach has been applied behavioral analysis (ABA), a rigorous technique of rewarding desired behaviors and coaching children in social, motor, and linguistic development. Today, many colleges and universities offer ABA training programs, and autism resource centers can be found in most urban and suburban areas. Behavior analysts trained in ABA work with detailed precision to help children improve verbal communication, eye contact, and social reciprocity. The Behavior Analyst Certification Board (BACB) is one

of the organizations that provides information about current ethics for practitioners of ABA and standards for certification (Behavior Analyst Certification Board, 2020).

For many families, access to ABA services has been important. But ABA has been criticized by many advocates of neurodiversity (Lord, 2023). Earlier forms of this therapy also included punishment and a focus on eliminating unfavorable behaviors (rather than fostering skills). Though this is no longer the case, ABA can remain rigid and strict. In addition, the commitment and the hours can be exhausting, for practitioners and children alike.

But perhaps most importantly, this therapy encourages conforming to society's expectations of what is typical, which may not be the best fit for an autistic child's needs or specific neurodivergence. This encouragement to mask someone's natural way of being may be considered oppressive, problematic, and harmful. Although the benefits of early ABA therapy include improved cognitive, social, and language skills (MacDonald et al., 2014), there is growing concern over the goals of this therapy, and whether its focus should remain on fitting in with society's expectations (Leaf et al., 2021).

Do you know anyone who has experienced ABA therapy either as a client or a practitioner? Could this therapy be revised or adjusted to address critics' concerns and be more empowering? Or should society change to better embrace neurodiversity?

Beyond early childhood, those with autism spectrum disorders may follow unique developmental trajectories. Though ASD is lifelong, some children develop skills like those of their non-autistic peers, whereas others may continue to struggle with particular social and emotional expectations across the lifespan (Elder et al., 2017).

References

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.) https://doi.org/10.1176/appi.books.9780890425787

Autistic Self Advocacy Network (n.d.). *FAQ.* https://autisticadvocacy.org/about-asan/faq/

Behavior Analyst Certification Board. (2020). *Ethics code for behavior analysts.* https://bacb.com/wp-content/ethics-code-for-behavior-analysts/

Behavior Analyst Certification Board. (n.d.). *About behavior analysis.* https://www.bacb.com/about-behavior-analysis/

Boyer, W. (2023). Development, construct validation, and normalization of a new early childhood self-regulation assessment scale. *Early Childhood Education Journal, 51*(4), 627–640. https://doi.org/10.1007/s10643-022-01310-9

Brett, D., Warnell, F., McConachie, H., & Parr, J. R. (2016). Factors affecting age at ASD diagnosis in UK: No evidence that diagnosis age has decreased between 2004 and 2014. *Journal of Autism and Developmental Disorders, 46*(6), 1974–1984. https://doi.org/10.1007/s10803-016-2716-6

Centers for Disease Control and Prevention. (2024, January 25). *Data & Statistics on Autism Spectrum Disorder.* https://www.cdc.gov/autism/data-research/?CDC_AAref_Val=https://www.cdc.gov/ncbddd/autism/data.html

Cole, P. M., Tamang, B. L., & Shrestha, S. (2006). Cultural variations in the socialization of young children's anger and shame. *Child Development, 77*(5), 1237–1251. https://doi.org/10.1111/j.1467-8624.2006.00931.x

Donahue, E. M. (1994). Do children use the Big Five, too? Content and structural form in personality description. *Journal of personality, 62*(1), 45–66. https://doi/10.1111/j.1467-8624.2006.00931.x

Elder, J. H., Kreider, C. M., Brasher, S. N., & Ansell, M. (2017). Clinical impact of early diagnosis of autism on the prognosis and parent-child relationships. *Psychology Research and Behavior Management, 10,* 283–292. https://doi.org/10.2147/prbm.s117499

Erikson, E. H. (1950) *Childhood and society.* ("Afterthoughts 1985" ed.) W.W. Norton & Company, Inc.

Falk, A., Kosse, F., & Pinger, P. (2020). Re-revisiting the marshmallow test: A direct comparison of studies by Shoda, Mischel, and Peake, (1990) and Watts, Duncan, and Qun (2018). *Psychological Science, 31*(1), 100–104. https://doi.org/10.1177/0956797619861720

Goldsmith, H. H., Buss, A. H., Plomin, R., Rothbart, M. K., Thomas, A., Chess, S., Hinde, R. A., McCall, R. B. (1987). Roundtable: What is temperament? Four approaches. *Child Development, 58*(2), 505–529. https://doi.org/10.2307/1130527

Gottman, J. M. (2024). *An introduction to emotion coaching.* https://www.gottman.com/blog/an-introduction-to-emotion-coaching/

Harter, S. (1999). *The construction of the self: A developmental perspective.* Guilford Press.

Ladau, E. (2021). *Demystifying disability: What to know, what to say, and how to be an ally.* Penguin Random House.

Leaf, J. B., Cihon, J. H., Leaf, R., McEachin, J., Liu, N., Russell, N., Unumb, L., Shapiro, S., & Khosrowshahi, D. (2021). Concerns about ABA-based intervention: An evaluation and recommendations. *Journal of Autism and Developmental Disorders, 52,* 2838–2852. https://doi.org/10.1007/s10803-021-05137-y

Lord, C. (2023, Nov 6). The controversy around ABA: Why some autism parents and advocates find fault with the therapy. *The Child Mind Institute.*https://childmind.org/article/controversy-around-applied-behavior-analysis/

Luby, J., Belden, A., Sullivan, J., Hayen, R., McCadney, A., & Spitznagel, E. (2009). Shame and guilt in preschool depression: Evidence for elevations in self-conscious emotions in depression as early as age 3. *Journal of Child Psychology and Psychiatry, 50*(9), 1156–1166. https://doi.org/10.1111/j.1469-7610.2009.02077.x

MacDonald, R., Parry-Cruwys, D., Dupere, S, & Ahearn, W. (2014). Assessing progress and outcome of early intensive behavioral intervention for toddlers with autism. *Research in Developmental Disabilities, 35*(12), 3632–3644. https://doi.org/10.1016/j.ridd.2014.08.036

Marsh, H. W., Ellis, L. A., & Craven, R. G. (2002). How do preschool children feel about themselves? Unravelling measurement and multidimensional self-concept structure. *Developmental Psychology 38*(3), 376–393. https://doi.org/10.1037/0012-1649.38.3.376

McClelland, M. M., & Cameron, C. E. (2012). Self-regulation in early childhood: Improving conceptual clarity and developing ecologically valid measures. *Child Development Perspectives, 6*(2), 136–142. https://doi.org/10.1111/j.1750-8606.2011.00191.x

Measelle, J. R., John, O. P., Ablow, J. C., Cown, P. A., & Cowan, C. P. (2005). Can children provide coherent, stable, and valid self-reports on the Big Five dimensions? A longitudinal study from ages 5 to 7. *Journal of Personality and Social Psychology, 89*(1), 90–96. https://doi.org/10.1037/0022-3514.89.1.90

Mischel, W. (2014). *The marshmallow test: Mastering self-control.* Little, Brown, and Co.

Montroy, J. J., Bowles, R. P., Skibbe, L. E., McClelland, M. M., & Morrison, F. J. (2016). The development of self-regulation across early childhood. *Developmental Psychology, 52*(11), 1744–1762. https://doi.org/10.1037/dev0000159

Orth, U., Erol, R. Y., & Luciano, E. C. (2018). Development of self-esteem from age 4 to 94 years: A meta-analysis of longitudinal studies. *Psychological Bulletin, 144*(10), 1045–1080. doi.org/10.1037/bul0000161

Perry, N. B., Dollar, J. M., Calkins, S. D., Keane, S. P., & Shanahan, L. (2020). Maternal socialization of child emotion and adolescent adjustment: Indirect effects through emotion regulation. *Developmental Psychology, 50*(3), 541–552. https://doi.org/10.1037/dev0000815

Pinto, A., Verissimo, M., Gatinho, A., Santos, A. J., & Vaughn, B. E. (2015). Direct and indirect relations between parent-child attachments, peer acceptance, and self-esteem for preschool children. *Attachment & Human Development, 17*(6), 586–598. https://doi.org/10.1080/14616734.2015.1093009

Poharnok, M., & Lang, A. (2021). Gender differences in mother-child conversations about shame and pride in a Hungarian sample. *Europe's Journal of Psychology, 17*(2), 58–74. https://doi.org/10.5964/ejop.2859

Putnick, D. K., Hahn, C., Hendricks, C., & Bornstein, M. H. (2020). Developmental stability of scholastic, social, athletic, and physical appearance self-concepts from preschool to early adulthood. *Journal of Child Psychology and Psychiatry, 61*(1), 95–103. https://doi.org/10.1111/jcpp.13107
Roberts, B. W. & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126*(1), 3–25. https://doi.org/10.1037/0033-2909.126.1.3
Robson, D. A., Allen, M. S., & Howard, S. J. (2020). Self-regulation in childhood as a predictor of future outcomes: A meta-analytic review. *Psychological Bulletin, 146*(4), 324. https://doi.org/10.1037/bul0000227
Sette, S., Baldwin, D., Zava, F., Baumgartner, E., & Coplan, R. J. (2019). Shame on me? Shyness, social experiences at preschool, and young children's self-conscious emotions. *Early Childhood Research Quarterly, 47*, 229–238. https://doi.org/10.1016/j.ecresq.2018.12.012
Sette, S., Zava, F., Baumgartner, E., Baiocco, R., & Coplan, R. J. (2017). Shyness, unsociability, and socio-emotional functioning at preschool: The protective role of peer acceptance. *Journal of Child and Family Studies, 26*(4), 1196–1205. https://doi.org/10.1007/s10826-016-0638-8
Skoufou, A., (2019). Social interaction of preschool children with autism spectrum disorders (ASD)—characteristics and educational approaches. *International Journal of Economics and Management Studies, 6*(6), 28–36. https://doi.org/10.14445/23939125/IJEMS-V6I6P105
Slobodskaya, H. R. (2021). Personality development from early childhood through adolescence. *Personality and Individual Differences, 172,* Article 110596. https://doi.org/10.1016/j.paid.2020.110596
Watts, T. W., Duncan, G. J., & Quan, H. (2018). Revisiting the marshmallow test: A conceptual replication investigating links between early delay of gratification and later outcomes. *Psychological Science, 29*(7), 1159–1177. https://doi.org/10.1177/0956797618761661

6.2 Identity in Context: Gender Development and Racial Identity in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Define biological sex and gender as distinct concepts
- Explain early influences on gender identity and role development
- Describe racial awareness and understanding in early childhood
- Explain early influences on racial and ethnic identity development

Noelle is starting to watch her family members to better understand herself and the world around her. As a five-year-old she knows that she is a girl, and someday she will grow up to be a woman just like her mother. She is also learning that sometimes women and men do some things differently; for instance, she likes to wear sparkly shoes and so does her mom, but her dad does not. She likes to sit and watch her mom put on makeup, and she looks forward to wearing makeup herself someday.

But Noelle also knows there are some ways in which she is more like her dad. She has tightly coiled curly hair and a dark complexion like her father, whereas her mom has naturally straight light hair and a fair complexion. Her dad is usually better at styling her hair, and in family photos she looks more like her dad. In Noelle's neighborhood, there are a lot of people with different hair and skin colors, but she's noticed that within each family people tend to look similar. She feels unique because the people in her family look different from each other.

This section will explore gender, racial, and ethnic identity development in early childhood.

Gender Development

By early childhood, most children can identify their gender, which is often congruent with their biological sex assigned at birth. As you may recall from 4.1 Autonomy and Sense of Self in Infants and Toddlers, *biological sex* describes the physical, anatomical, genetic, chromosomal, and hormonal components that help us describe ourselves as male, female, or intersex. *Gender* refers to the psychological, social, and cultural elements that allow us to describe ourselves as a boy, a girl, or a person outside the gender binary.

In this section, we'll consider topics related to gender, including gender identity development, gender socialization, and two important contexts for gender: peers and the media.

Gender Identity Development

According to **gender schema theory**, young children are regularly watching the world around them to better understand gender roles, expectations, and forms of expression. By age three, most have reached the first milestone described in this theory, which is the ability to label their gender, in most cases as girl or boy (Bem, 1981; Bem, 1983).

Two additional milestones are typically met during early childhood. At approximately age 4, children acquire **gender stability**, which is the understanding that, for most people, boys grow up to be men, that girls grow up to be women, and that gender is a stable concept. However, at this age it is also common for children to assume

that temporary changes in appearance, actions, or social roles can alter someone's gender and change gender stability. For instance, they may think a girl who cuts her hair short is now a boy, or that a boy who practices ballet has become a girl.

By age six, near the end of early childhood, most children reach the third and final milestone, **gender constancy**, which is the belief that gender is resilient across contexts and situations, and immune to superficial changes like altered hairstyles or clothing and violations of gender expectations. Though these three realizations about gender are normative markers of gender development, individual differences and the diverse environments children experience will somewhat influence the age at which they are reached (Martin & Ruble, 2010).

During the preschool years, children have very rigid understandings of gender and can often be strict enforcers of gender expectations and gender norms. They tend to prefer same-gender peers to play with at preschool and daycare centers, and they are very observant and ready to call out children who act, dress, or behave in ways that break cultural gender stereotypes. This behavior is not due to malice or discrimination, but rather to young children's still developing cognition and their limited environmental experiences. At approximately age five, children become proficient at understanding games and following rules, and they initially see gender performance as a set of rigid rules that cannot be broken (Figure 6.7). As neurological and cognitive development continue and as children gain more social experiences in the world, they begin to understand nuances in rules and become less judgmental and enforcing of gender norms.

(a)

(b)

FIGURE 6.7 Young children often follow rules around gender expression, such as that (a) boys must be more active (b) and girls more sedentary in their play behavior. (credit a: modification of work "Slide" by Axel Bührmann/Flickr, CC BY 2.0; credit b: modification of work "IMG_9237" by Abigail Batchelder/Flickr, CC BY 2.0)

When children reach age six and understand gender constancy, their belief in the rigidity of gender norms starts to ebb. Along with this new cognitive milestone comes more leniency in their gender expectations. Although they still maintain a preference for same-gender play, children may be more accepting of gender diversity, particularly if they are exposed to examples in the media or in preschool and family life. For example, they may start to realize that short or long hairstyles can be for anybody and that lots of children can enjoy dance and ballet.

LINK TO LEARNING

Review this resource about gender socialization and recommendations for healthy gender development in young children (https://openstax.org/r/104GenderDev) to learn more.

Gender Socialization

Children do not develop a sense of gender in isolation. Often, the greatest influence in early childhood comes from family members and caregivers as children infer differences between them as being due to gender. That is, if dad washes the dishes and mom mows the lawn, they assume dishes are boys' work and lawn care is for girls, even if the division of labor is a factor of skills, preferences, or schedules. These patterns and observations are highly similar across children in gay, lesbian, and heterosexual families (Bos & Sandfort, 2010; Goldberg et al., 2012).

Children will use the expectations of gender to which they are exposed early in life to guide them moving forward. The way gender influences chores, clothing, play preferences, and behavior expected from others will go on to shape the way they navigate and respond to others and themselves. Often children are treated differently by their parents based on their perceived gender (Morawska, 2020). For example, girls are rewarded for being more cooperative, submissive, empathetic, and domestic, whereas boys are rewarded for being more assertive, brave, strong, and active. In families in which division of labor is unconventional, counter-stereotype, or more egalitarian, children internalize this portrayal of gender roles and may have more egalitarian views of gender than children raised in more traditional homes.

While all parents tend to influence gender socialization and development in their children, heterosexual mothers and fathers tend to do so in different ways. Mothers are more likely than fathers to respond to children based on their personality, skills, and interests, whereas fathers are more likely to enforce gender stereotypes (Endendijk et al., 2014). In addition, fathers are more likely to encourage independence and courage in their sons, but dependence and caution in their daughters. In single-parent families, children are likely to develop their gender roles from both their parent and their external role models, such as teachers and family friends (Chen et al., 2024). Parental socialization of gender also varies by ethnicity; Brown and colleagues (2015) found that fathers of both White and Native American children tended to show more negative emotions than mothers did when children deviated from gender norms in emotion socialization, but mothers and fathers of Black children had more supportive reactions.[1]

Gender and Peers

In addition to the family, young children learn much about gender from siblings and same-age peers. Often, daycare and preschool settings offer chances for children to observe how boys and girls vary in terms of clothing, interests, personality, and behavior. Children's typical preference for same-gender playmates in early childhood encourages behavioral homophily, or group similarity. Often a new interest, clothing style, or game that is popular among same-gender peers will become a coveted novel form of expression and a mechanism for group cohesiveness.

Consider Maggie, for instance. When she was three, her brother James was six. James was interested in all things superhero, and so was Maggie—until she started preschool. After two weeks of preschool, Maggie made friends with a group of girls who all enjoyed playing with toy ponies, and she also became fascinated with ponies and disinterested in superheroes. Although children with one sibling of a different gender are more likely to play with counter-stereotypical toys (Kuchirko et al., 2021), peer interactions in preschool also have a major impact on gender socialization (Kollmayer et al., 2018).

Because preschoolers tend to view the rules of gender much like the rules of a game, the influence of same-gender peers on play preferences and stereotypes is potent. Caregivers who attempt to refute the gender rules endorsed by peers may find this an unrelenting task. Gentle reminders and introductions of exceptions and caveats can help young children to gradually learn more flexibility. For instance, if a four-year-old insists that stripes are worn by boys and polka dots are worn by girls, a parent who decides to wear the counter-stereotypical design can gently challenge the child's assumptions.

1 This study (Brown et al., 2015) uses the terms "African American," "European American," and "Lumbee American Indian") in its research.

Gender and the Media

Finally, a powerful source of gender socialization in early childhood is the media. Although parents and caregivers often curate some of the media to which children are exposed—such as by selecting films, video games, and technology—children are constantly bombarded with color-coded advertisements and shopping aisles filled with gender-specific products, and subtle nods to gender norms that parents may miss (Figure 6.8). In the 1990s, hyper-gendered marketing emerged, promoting many products that had not previously been gendered but were now available in feminine and masculine versions (Moss, 2009). These included children's hygiene products like toothbrushes, electronics like video recorders and telephones, and stationery supplies such as staplers and paper clip dispensers. The trend continues, with gendered advertising on social media sites that targets girls and boys with different styles, messaging, and products (Azmi et al., 2021). These advertisements may have indirect or direct influences on gender socialization given that they may be seen by parents, relatives who buy presents, or by the children themselves.

(a) (b)

FIGURE 6.8 Childhood toys often represent exaggerated forms of gender, such as (a) large eyes and (b) inflated muscles. (credit a: modification of work "17" Limited Edition Elsa Frozen Fever Doll" by Mary Hung/Flickr, CC BY 2.0; credit b: modification of work "Eugene Pride 2023" by David Geitgey Sierralupe/Flickr, CC BY 2.0)

LINK TO LEARNING

Photographer Jeongmee Moon attempted to capture the trend toward hyper-gendered marketing in her Pink and Blue Project (https://openstax.org/r/104PinkBlue) that documents children with their personal items such as clothes and toys. Pink and blue dominate in the photos, coloring everything from lint rollers to toy shovels to winter gloves.

But not all media influences are as innocent as directing consumers to a certain color. Sociologists and media experts have identified trends in characters and gender roles in children's media. Historically, girl or women characters have been scripted as submissive, domestic, or motherly, with very little opportunity to display leadership, analytical skills, or humor. Boy or man characters have often been portrayed as stoic, brave, and competitive, with few exceptions who show compassion, vulnerability, or nurturing (Charafeddine et al., 2020).

As well as reinforcing traditional gender roles, children's media often portray characters in hypermasculine and hyperfeminine extremes in terms of body types. Boys and men are shown as muscular and athletic with deep voices, such as Maui from Disney's *Moana*, Buzz Lightyear from Pixar's *Toy Story*, and Captain America

from Marvel's *Avengers*. In comparison, girls and women are typically portrayed as thin with hourglass figures, perfect makeup, and lustrous hair. Examples include Jasmine from Disney's *Aladdin*, Elastigirl from Pixar's *Incredibles*, and Wonder Woman from DC's *Justice League*. These exaggerated depictions in children's media may influence young children to aspire to look and behave like their heroes, a goal that is unobtainable.

Inclusive Depictions of Gender

In recent years, more diversity has emerged in characters and gender roles in children's media. Girls and women have been depicted in more nuanced ways, such as Tinkerbell who is a fairy and an engineer, a superhero named Kim Possible who defies gender stereotypes, and Raya, the Disney princess who swordfights and saves her world. Inclusive depictions of boys and men have been slower to emerge, but some examples include Aang from *Avatar: The Last Airbender*, who is empathetic, joyful, and kind; Gonzo from *Muppet Babies*, who enjoys wearing dresses at times; and Hiccup from *How to Train Your Dragon*, who shows endurance, cooperation, and grit rather than relying on aggression.

Children's media are also starting to show more diversity in terms of gender. In Pixar's 2023 film *Elemental*, one character named Lake was described as non-binary. Other non-binary characters in children's shows include Kazi from *The Dragon Prince*, Double Trouble from *She-Ra*, and Angel Jose from *Craig of the Creek*.

LINK TO LEARNING

Children begin to understand and internalize gender roles and stereotypes from a wide range of sources including their families, the media, and peers. Watch this video in which children explain some of the ways they've come to understand gender (https://openstax.org/r/104ChildGender) to learn more.

Racial and Ethnic Identity Development

Along with gender development, early childhood also includes important milestones in understanding our own racial and ethnic identity. A broad set of theories used to describe these stages is **ethnic-racial identity development**, and the first milestone children reach in this framework is often ethnic labeling (Umana-Taylor et al., 2014). Ethnic labeling is the process of assigning labels to yourselves and others to describe racial, ethnic, or cultural status or nationality. The labels a child uses will be influenced by their surrounding culture. In the United States, labels may identify racial groups such as Black and White, and ethnic groups such as Latine or Arab. In New Zealand, labels may include racial groups such as European, Asian, Maori, and Pasifika. In Nigeria, these labels may include ethnic groups such as Hausa, Yoruba, and Igbo.

The second milestone in early childhood is typically the acquisition of ethnic knowledge, with which children begin to understand, organize, and compare information about different groups. This process can be as simple as learning about different food, clothing, and holiday traditions from around the world, or as complex as understanding racial prejudice, stereotypes, and discrimination (Figure 6.9).

FIGURE 6.9 Cooking traditional dishes together is one way young children learn about their culture and ethnicity. (credit: modification of work "Three Generations of Women Cooking" by FNS Midwest/Flickr, Public Domain)

Finally, around the age of six, children start to develop a sense of ethnic constancy. As with gender constancy, they begin to understand that their racial and ethnic identity is a stable trait that does not fluctuate based on clothing, food, or situation. For instance, a child learns that attending a Lunar New Year celebration at a Chinese community hall does not mean they themselves become Chinese. At this point, children understand that their racial and ethnic identity will carry on throughout their life.

The understanding of racial and ethnic development in young children is informed through considering racialized identities and parental racial-ethnic socialization.

Racialized Identities

The development of racial and ethnic identity varies depending on the groups to which children belong. Ethnic groups that have been historically marginalized or given little power or resources are referred to as racialized. Children who identify with a racialized group are often more aware of racial stereotypes, discrimination, and differentiation than children who identity with non-racialized groups. Most research in the United States has focused on comparing racial knowledge among Black and White children. For example, as a racialized group, Black children tend to be more aware of racial stereotypes than White children (Essien & Wood, 2021).

LINK TO LEARNING

Preparing your child for the world includes teaching them how to stay safe around police, especially for Black families in the United States. Watch this video about how some parents teach their children to stay safe (https://openstax.org/r/104ChildSafety) to learn more.

Young children begin to show in-group preference, or partiality for playmates of similar racial and ethnic background to themselves, though such choices may vary by the child's environment and other influences (Ikura et al., 2021). Moreover, they start to understand stereotypes about various ethnic groups, and they will often remember information and examples that are consistent with stereotypes and forget what is in conflict with them. For racialized children, this process can include being influenced by harmful and limiting stereotypes.

The development of ethnic and racial identity has many positive outcomes for racialized children. In addition to facilitating understanding and differentiating between groups of children, it can help develop positive associations with communities, leaders, art forms, and hobbies and foster a sense of belonging. For instance, being included in and celebrating heritage can encourage a sense of emotional fulfillment, inclusion, and purpose (Umana-Taylor et al., 2014).

Parental Racial-Ethnic Socialization

From early in life, parents provide implicit and explicit information about their beliefs and values concerning ethnicity (Figure 6.10). This information often concerns two main themes. First, parents provide information about pride and heritage. Activities such as cooking together, listening to music, sharing language and stories, visiting museums, and connecting with grandparents contributes to children's understanding of their heritage and can help them find pride in their race and ethnic identity. This type of racial-ethnic socialization is typically positive and is connected with developing better social skills, academic outcomes, and mental health (Huguley et al., 2019).

FIGURE 6.10 Young children learn a lot about race and ethnicity from their parents. (credit: modification of work "US Navy 110516-N-QY430-218 Mass Communication Specialist Seaman Jonathan Vargas holds his daughters during a homecoming celebration for the amphibi" by U.S. Navy/Wikimedia Commons, Public Domain)

INTERSECTIONS AND CONTEXTS

Why is Teaching "Colorblindness" Problematic?

Starting in the 1960s, around the time of the U.S. civil rights movement, some White parents began to teach their children to "not see race," or to be "colorblind". The intention behind this approach was to be egalitarian, to promote equality, and to treat people of all races the same way. Although many White individuals still consider this a viable strategy for promoting equal rights, research over the past five decades (Mueller, 2017) has shown that "colorblindness" merely makes those from privileged backgrounds blind to their privilege and blind to the discrimination that others face. Assuming everyone is the same regardless of race ignores the impact society has had on marginalized individuals, and it assumes that marginalized individuals see and experience things the same way a White person does, which is not the case.

More recent anti-racist trainings have recommended a different approach. Rather than attempting to not see race, people are taught to acknowledge the oppression that has occurred, and to learn and read about other ethnicities as much as possible. For parents, this process can mean bringing their children to an Afro-Caribbean

festival, going to a story-time reading session about immigrant families at the local library, and learning some Spanish phrases from their Latine friends. It also includes listening to racialized communities and standing with them in solidarity when they need support to speak out against injustice, such as by showing up at rallies and protests and signing open letters demanding equity.

Parents and families also pass along information about biases and stereotypes. This process can include teaching racialized children about the history of discrimination and self-preservation. For example, a family may teach their children about police brutality if they experience a traffic stop while driving together (Anderson et al., 2021). Both racialized and non-racialized children can also learn mistrust, bigotry, and prejudice. However, parents who attempt to teach their children anti-racist thought and to identify and oppose racism have been found to be effective at reducing discrimination and in-group preferences in them (Heberle et al., 2021).

Media Influences on Race and Ethnicity Development

Portrayals of characters of color in children's media matter for all children. Representations of racial and ethnic minorities have historically been limited to harmful and problematic stereotypes. In addition, the focus on White and European characteristics in children's media has had negative impacts on Black children's body image, particularly with regard to weight, hair, and ideals of beauty (Montle, 2020). This negative impact has been seen in children of other marginalized identities as well, including Asian American and Native American children and youth (Chen et al., 1999; Sun, 2002).

Overall media representation has gradually improved, but still relies heavily on cultural stereotypes and tokenism. Tokenism occurs when a character is presented in a one-dimensional light, as though their race, ethnicity, gender, or disability represents their entire personality and contribution to a plot. Tokenized characters often interact with other, more multi-dimensional characters who are not defined solely by their demographic characteristics, further reinforcing racial tropes and discouraging the view of minoritized individuals as vibrant and multifaceted.

Although representation of girls of color has improved in recent years with Disney characters such as Tiana (from *The Princess and the Frog*), Moana (from *Moana*), and Mirabel (from *Encanto*), representation of Black boys and men in children's media has lagged. As of 2023, some nuanced examples of Black boys and men in children's media include *Craig of the Creek*, Ezran from *The Dragon Prince*, and Bow from *She-Ra*.

References

Anderson, L. A., O'Brien Caughy, M., & Owen, M. T. (2021). "The Talk" and parenting while Black in America: Centering race, resistance, and refuge. *Journal of Black Psychology, 48*(3–4), 475–506. https://doi.org/10.1177/00957984211034294

Azmi, N. J., Hassan, I., Ab Rashid, R., Ahmad, Z., Aziz, N. A., & Nasidi, Q. Y. (2021). Gender stereotype in toy advertisements on social networking sites. *Online Journal of Communication and Media Technologies, 11*(4), Article e202122. https://doi.org/10.30935/ojcmt/11212

Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review, 88*(4), 354–364. https://doi.org/10.1037/0033-295X.88.4.354

Bem, S. L. (1983). Gender schema theory and its implications for child development: Raising gender-aschematic children in a gender-schematic society, *8*(4), 598–616. https://doi.org/10.1086/493998

Bos, H., & Sandfort, T. G. M. (2010). Children's gender identity in lesbian and heterosexual two-parent families. *Sex roles, 62,* 114–126. https://doi.org/10.1007/s11199-009-9704-7

Brown, G. L., Craig, A. B., & Halberstadt, A. G. (2015). Parent gender differences in emotion socialization behaviors vary by ethnicity and child gender. *Parenting, Science, and Practice, 15*(3), 135–157. https://doi.org/10.1080/15295192.2015.1053312

Charafeddine, R., Zambrana, I. M., Triniol, B., Mercier, H., Clement, F., Kaufman, L., Reboul, A., Pons, F., & van der Henst, J. (2020). How preschoolers associate power with gender in male-female interactions: A cross-cultural investigation. *Sex Roles, 83*(7), 453–473. https://doi.org/10.1007/s11199-019-01116-x

Chen, I-J., Wang, X., Sun, Z., Tang, P., & Chen, P. (2024). Intergenerational transmission of parental child-rearing gender-role attitudes and its influence on gender roles in single-parent families. *BMC Psychology, 12,* 96. https://doi.org/10.1186/s40359-024-01594-z

Chen, P., Haufler, A., & Taam, H. (1999). A different world: Native American children's perceptions of race and class in the media. A series of focus groups of Native American children. *Children Now.* https://eric.ed.gov/?id=ED436233

Endendijk, J. J., Groeneveld, M. G., van der Pol, L. D., van Berkel, S. R., Hallers-Haalboom, E. T., Mesman, J., & Bakermans-Kranenburg, M. J. (2014). Boys don't play with dolls: Mothers' and fathers' gender talk during picture book reading. *Parenting, Science, and Practice, 14*(3–4), 141–161. https://doi.org/10.1080/15295192.2014.972753

Goldberg, A. E., Kashy, D. A., & Smith, J. Z. (2012). Gender-typed play behavior in early childhood: Adopted children with lesbian, gay, and heterosexual parents. *Sex Roles, 67,* 503–515. https://doi.org/10.1007/s11199-012-0198-3

Heberle, A. E., Hoch, N., Wagner, A. C., Frost, R. L., & Manley, M. H. (2021). "She is such a sponge and I want to get it right": Tensions, failures, and hope in White parents' aspirations to enact anti-racist parenting with their young White children. *Research in Human Development, 18*(1), 75–104. https://doi.org/10.1080/15427609.2021.1926869

Huguley, J. P., Wang, M., Vasquez, A. C., & Guo, J. (2019). Parental ethnic-racial socialization practices and the construction of children of color's ethnic-racial identity: A research synthesis and meta-analysis. *Psychological Bulletin, 145*(5), 437–458. https://doi.org/10.1037/bul0000187

Essien, I. & Wood, J. L. (2021). I love my hair: The weaponizing of Black girls hair by educators in early childhood education. *Early Childhood Education Journal, 49*(3), 401–412. https://doi.org/10.1007/s10643-020-01081-1

Ikura, I. U., Curenton, S. M., Sims, J., Harris, K., & Ibekwe-Okafor, N. (2021). Ethnic-racial identity formation in the early years. Durham, NC: Hunt Institute.

https://www.researchgate.net/profile/Stephanie-Curenton/publication/357538567_ETHNIC-RACIAL_IDENTITY_FORMATION_IN_THE_EARLY_YEARS/links/61d34c4bda5d105e5519170d/ETHNIC-RACIAL-IDENTITY-FORMATION-IN-THE-EARLY-YEARS.pdf
Kollmayer, M., Schultes, M., Schober, B., Hodosi, T., & Spiel, C. (2018). Parents' judgments about the desirability of toys for their children: Associations with gender role attitudes, gender-typing of toys, and demographics. *Sex Roles, 79*(5), 329–41. https://doi.org/10.1007/s11199-017-0882-4
Kuchirko, Y., Bennet, A., Halim, M. L., Costanzo, P., & Ruble, D. (2021). The influence of siblings on ethnically diverse children's gender typing across early development. *Developmental Psychology, 57*(5), 771. https://doi.org/10.1037/dev0001173
Martin, C. L., & Ruble, D. N. (2010). Patterns of gender development. *Annual Review of Psychology, 61*, 353–381. https://doi.org/10.1146/annurev.psych.093008.100511
Montle, M. E., (2020). Debunking Eurocentric ideals of beauty and stereotypes against African natural hair (styles): An Afrocentric perspective. *Journal of African Foreign Affairs, 7*(1), 111–127. http://dx.doi.org/10.31920/2056-5658/2020/7n1a5
Morawska, A. (2020). The effects of gendered parenting on child development outcomes: A systemic review. *Clinical Child and Family Psychology Review, 23*, 553–576. https://doi.org/10.1007/s10567-020-00321-5
Moss, G. (2009). *Gender, design and marketing: How gender drives our perception of design and marketing*. Gower. https://doi.org/10.4324/9781315254593
Mueller, J. C. (2017). Producing colorblindness: Everyday mechanism of White ignorance. *Social Problems, 64*(2), 219–233. https://doi.org/10.1093/socpro/spw061
Sun, Chyng-Feng, "Stories matter: Media influence on Asian American identities and interracial relationships" (2002). *Doctoral Dissertations Available from Proquest*. AAI3068596. https://scholarworks.umass.edu/dissertations/AAI3068596
Umana-Taylor, A. J., Lee, R. M., Rivas-Drake, D., Syed, M. ,Seaton, E., Quintana, S. M., Cross, W. E., Schwartz, S. J., & Yip, T. (2014). Ethnic and racial identity during adolescence and into young adulthood: An integrated conceptualization. *Child Development, 85(*1), 21–39. https://doi.org/10.1111/cdev.12196

6.3 Families as Context in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe different parenting styles
- Discuss the key research on rewards and punishments for children
- Explain how siblings influence development in early childhood
- Describe the psychological impact on children of divorce

Henry's parents Lionel and Jerome love him very much. They're always fussing over him and trying to make him happy. As a four-year-old, Henry can be demanding. He loves cupcakes and asks for sweets constantly, so Lionel and Jerome always end up buying decadent desserts on grocery day. They love Henry's big smile and his happy squeals. However, after the cupcakes, Henry has a hard time winding down for bedtime. A warm bath and comfy story time still don't do the trick. So, one of his dads will cuddle him and sing lullabies until eventually Henry drifts off. It can be tiring, and sometimes Henry falls asleep only late at night.

This routine might all need to change once Henry's younger brother has a say. Bennie is only a week old, and already he is altering the way his parents respond to Henry. A newborn needs constant attention, so Henry has been left to entertain himself more. But so far, he is excited about his baby brother and enjoys helping his dads find the burp cloths and clean diapers. It's exciting for Lionel and Jerome to see how their family dynamic is shifting with its newest member.

Like all new parents, Lionel and Jerome will provide a variety of experiences for their children. Their parenting styles will affect their family, as will their cultural practices. The choices they make regarding discipline will also have an impact, as will the relationships between individual family members. For example, Bennie and Henry will have their ups and downs as siblings, and the quality of Jerome and Lionel's marriage (and whether it lasts or ends) will also loom large. Let's consider how these various familial contexts affect early childhood development.

Parenting Styles

Young children rely on their parents and caregivers to help them with daily tasks such as feeding, dressing, and self-care. As they grow and learn to navigate social interactions with others, children often use their relationship with their parents as a guide. Each day, parents model how to communicate, encourage, play, learn, and cooperate with others. Mundane tasks like household chores, errands, and bathing teach children about responsibility, collaboration, and social roles. The way a caregiver provides structure, feedback, and emotional support for a child is often called a **parenting style**.

Parenting Styles

The way parents influence the social development of young children was first studied by Diana Baumrind, who identified three unique approaches to parenting based on their degree of warmth and structure (Baumrind, 1966, 1971). These parenting styles differ in the levels of strictness and warmth shown to children (Maccoby & Martin, 1983) (see Figure 6.11).

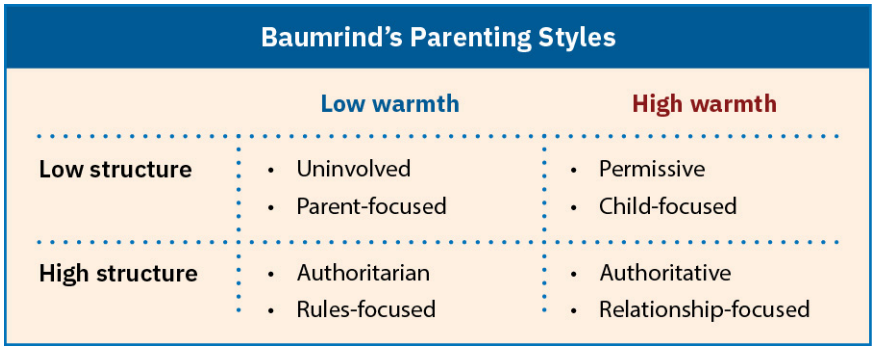


FIGURE 6.11 Even current parenting trends often fall clearly along Baumrind's original two major parenting dimensions of warmth and structure (Kuppens & Ceulemans, 2019). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

One of the original three styles identified by Baumrind (1966) was **authoritarian parenting** and is characterized by a high level of structure, meaning the parents provide boundaries, rules, and discipline to their children, but also a low level of warmth. These parents can be described as taking a rules-focused approach; they prioritize having their children follow rules and obey adult directions. Authoritarian parents are less likely to negotiate with their children and instead direct and demand, without leaving room for compromise. A metaphor for the authoritarian parent is the brick wall—it is firm and has no give—which reflects how such a parent might be inflexible and uncompromising.

Children of authoritarian parents may become wary around authority figures and hesitant to speak up for themselves when there are misunderstandings, or they may become more likely to rebel as they grow older. However, in some situations, a strong protective figure may be helpful.

The term **authoritative parenting** refers to a more democratic, less rigid, and more gentle than authoritarian parenting. In this second parenting style characterized by Baumrind, parents take a relationship-focused approach in which they provide a moderate to high level of structure for their children, but also a high level of warmth and emotional support. Authoritative parents are more likely to talk things out with their children, model communication and conflict resolution skills, and offer explanations for their rules and disciplinary practices. A metaphor for the authoritative parent is a drum—it is firm but also flexible—which reflects the way such a parent is responsive and reactive to the needs of their child while still providing boundaries. Children of authoritative parents tend to develop skills related to compromising, coping, and understanding the needs of others (Haslam et a., 2020).

Baumrind's third parenting style is **permissive parenting** and describes parents who display high levels of warmth but low levels of structure. These parents often take a child-focused approach to making decisions and navigating conflict. They often prioritize ensuring their child's happiness by providing rewards, stimulation, and praise, and avoiding discipline and punishment. They are less likely to refuse their child's requests and often relax their own guidelines to fit the child's preferences. A metaphor for the permissive parent is gelatin dessert—it is highly moldable and movable without a defined shape or form—representing how such a parent will change themselves to please their child. Children of permissive parents may struggle to form compromise and conflict resolution skills (Tavassolie et al., 2016), particularly because they are accustomed to having things their way.

A fourth parenting type, **uninvolved parenting**, was not identified by Baumrind but was added by Maccoby and Martin (1983). This style is characterized by low structure and low warmth. Uninvolved parents tend to provide little attention, discipline, or support for their children and take a parents-focused approach. They often prioritize their own experience with little regard for the child, which is why this parenting style is sometimes referred to as neglectful parenting. Sometimes uninvolved parenting arises due to unforeseen circumstances, like major medical, economic, or domestic concerns that are beyond a parent's control. Sometimes parents are struggling with mental health concerns, addictions, or substance misuse. Other times

they are just disengaged, perhaps due to an unwanted pregnancy or custody placement. A metaphor for an uninvolved parent is a ghost—someone who is often absent in their children's lives. Children of uninvolved parents grow up with little guidance and are at risk of forming negative coping strategies, behavioral patterns, and developmental outcomes.

LINK TO LEARNING

Parenting styles can be described in many ways. Watch this video about Baumrind's theory of parenting styles (https://openstax.org/r/104Baumrind) to learn more.

Predictors of Parenting Styles

Parenting styles describe parents' behaviors, of course, but they may arise from bidirectional interactions with other family members. For example, a parent or caregiver is often stricter with one child and more lenient toward another. This difference could be based on the children's temperaments, perceived genders, or other factors. A child who attempts to push boundaries may influence a parent to provide more structure; a child who is anxious and nervous may lead a parent to show more warmth and encouragement (Figure 6.12). Moreover, parenting styles can shift as adults grow and develop; younger parents may start as permissive and grow to take on more authority. Conversely, parents with high expectations may adjust their standards and relax their demands as they grow older. Further, many children grow up with more than one caregiver and may experience different parenting styles from each.

FIGURE 6.12 Many parents prioritize showing warmth but also provide structure to their children. (credit: "Secure Attachment" by Kerry Ceszyk/Flickr, CC BY 4.0)

Infant-caregiver attachment style may also influence parenting styles. In 4.4 Social Development in Infants and Toddlers, you learned about the infant attachment styles called secure, insecure avoidant, insecure ambivalent, and disorganized. A parent who has a secure and close relationship with their child might be more likely to talk things out, provide rationales, and demonstrate an authoritative style. In comparison, a parent who has a more strained relationship with their child may choose to discipline and criticize their child as a main mechanism of influence. Finally, a parent who has an overly clingy and dependent child may attempt to use gentle encouragement and reward.

Additional Parenting Styles

The four parenting styles discussed so far were identified along the axes of warmth and structure. A third axis of support for autonomy was discussed by Cline and Fay in 1990. Autonomy is our sense of independence and control over ourselves. Parents who display a high support for autonomy often allow their children to try new challenges, take on new responsibilities, and overcome their own obstacles (Robichaud et al., 2020). Parents

who exhibit low support for autonomy may prevent their children from facing hardship, readily solve dilemmas for their child, or interfere in common daily tasks. Parents with especially low support for autonomy have been labeled "helicopter parents" because they hover over their children, intrude inappropriately in their daily lives, and prevent the development of conflict resolution and coping skills. Other names for this parenting style are "steamroller parents" and "snowplow parents." These parents anticipate upcoming obstacles and clear the path, so their children do not encounter any friction or hardships.

Allowing children to resolve minor inconveniences, conflicts, and challenges has been shown to have developmental benefits. Children who are permitted to work through their own obstacles are more likely to gain a sense of resilience, self-efficacy, and positive social skills. Children who rely on their parents to monitor and interfere may be more dependent, nervous, and anxious in new situations (Neubauer et al., 2021). Overall, children benefit best in an environment that provides high levels of warmth, structure, autonomy, and stability.

Culture and Child-Rearing

Parenting does not happen in isolation. Rather, it's embedded within a culture and tied to cultural values (Figure 6.13). Most early research on parenting and child development focused on Western, educated, industrialized, rich, and democratic (WEIRD) cultures, thus studying White middle-class families in the United States, Canada, and Europe. Evaluating theories about child development for their cultural robustness adds value to our understanding of and study of human development.

FIGURE 6.13 Culture influences the way parents prioritize and navigate child-rearing. (credit: "Family" by raYmon/ Flickr, CC BY 2.0)

For instance, Baumrind's theory of parenting styles often suggests that authoritative or democratic parenting is the most advantageous. However, in studies of children growing up in urban, high-crime areas, some researchers found that strict and authoritarian parenting may be an adaptive approach to reducing some risky behaviors (Clark et al., 2015). For children in higher-risk environments or of lower socioeconomic status, having an authoritarian parent in early childhood was once thought to lower the risk of delinquency, criminal activities, and heavy drinking later in adolescence by providing protection from neighborhood stressors. However, more recent research has suggested that strict and harsh parenting is not necessarily the optimal strategy, and that high levels of warmth and parent childrearing knowledge may be more effective prevention and intervention strategies for youth across classes, races, and ethnicities (Climent-Galarza et al., 2022; Mowen & Schroeder, 2018; Pinquart & Kauser, 2018; Roubinov & Boyce, 2017; Villarejo et al., 2024).

Support for autonomy may be advantageous for parents who are raising children in individualistic cultures in which self-responsibility and independence are valued. However, for parents in China and Korea, the use of control and boundaries tends to be a better predictor of positive child outcomes such as social emotional

competence and academic achievement (Yim, 2022). This may be due to cultural emphasis on collectivism, or the upholding of group well-being over individual well-being.

Indeed, a large study (Deater-Deckard et al., 2011) that investigated the role of individualism and collectivism on parenting styles in nine countries found that these cultural values played a large role on the extent to which parents prioritized control and/or warmth in caregiving for their children (Figure 6.14).

Source: Deater-Deckard, et al. (2011). The association between parental warmth and control in thirteen cultural groups. *Journal of Family Psychology, 25*(5), 790-794.

FIGURE 6.14 Parenting priorities can vary across a range of cultures and countries, but they share common trends in prioritizing both warmth and structure (control). (data source: Deater-Deckard, et al.; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Motivation, Discipline, and Initiative

Raising young children often means responding to their behaviors, words, and feelings in a way that will shape their future behaviors. Nearly every caregiver response has an impact on children's motivation and understanding of the world. B. F. Skinner (1938) was the first to describe these responses in detail as consequences in his theory of operant conditioning.

Consequences follow a behavior and are either encouraging or discouraging. A consequence that encourages a behavior is known as a reinforcement, such as a smile, praise, or a new toy. A consequence that discourages a behavior is known as a punishment, such as a stern look, a scolding, or a time out. Notably, a consequence that encourages behavior in one child—like an apple—might discourage the same behavior in a different child.

Overall, reinforcement is a more effective and efficient strategy in shaping children's behavior than

punishment. Teaching what *to do* and rewarding it adds information and knowledge for children, as opposed to teaching what *not to do*, which subtracts knowledge. Reinforcement encourages neurological synaptic growth, or the fostering of new connections in the brain, whereas punishment relies on synaptic pruning, or the suppression of neurological associations, which requires much more effort. Moreover, reinforcement allows caregivers and children to maintain a happy, calm, supportive interaction that encourages learning and listening. When children are upset, irritated, or frustrated, they are less able to learn new information.

Positive Reinforcement and Rewards

Although reinforcement tends to be effective, in some situations it can undermine children's motivation. Reinforcement works best when it is novel and unexpected, and less well when it has become routine. It is also most effective when delivered immediately, such as praise and a hug given immediately after a chore has been completed, and not an hour later or at the end of the day.

Finally, reinforcements should be small and intangible, such as praise, body language, and attention, rather than large and tangible like toys, food, money, or stickers. Much of the time, children are happy to receive small tokens of encouragement rather than large gestures. Although tangible rewards can help motivate a child to start a new behavior, such as putting away their toys at the end of the day, they don't help to sustain the behavior over the long term. Rather, intangible rewards, along with feelings of pride, confidence, and connectedness with others, are the leading motivators for sustaining long-term habits.

In several studies between 1979 (Loveland & Olley) and 1999 (Deci et al), children were divided into two groups and asked to draw and color pictures. In one group, children were offered no tangible rewards, only praise and encouragement from researchers. In the other group, children were offered money for each picture completed. Children who were offered no tangible reward spent more time on their pictures, colored and drew in more detail, and showed higher levels of pride, contentment, and joy. In comparison, children who were paid completed more pictures, but they did so more quickly and used less detail. Moreover, children in this group displayed lower levels of joy and pride in their work. These experiments demonstrated that offering a tangible reward for a behavior that otherwise would be motivating in and of itself can actually compromise and decrease motivation (Figure 6.15).

FIGURE 6.15 Children learn effectively when they are rewarded with praise and attention for their efforts (Werchan et al., 2023). (credit: modification of work "Modern art?" by Harald Groven/Flickr, CC BY 2.0)

A tangible reward like money is a form of extrinsic motivation, or an external reason or consequence for a behavior. In comparison, drawing a picture for its own sake carries intrinsic motivation, an internal reason for completing a behavior because the behavior itself brings joy, a sense of accomplishment, or connectedness. Intrinsic motivation is linked with long-term motivation and the formation of healthy habits.

Punishment and Discipline

Although reinforcement tends to be more effective than punishment, there are situations in which punishment may be more appropriate. For instance, if a child is performing a dangerous act and is at risk of harm, a parent's intervention to discourage future dangerous behavior is warranted. Much like reinforcement, punishment can be an intangible response such as a facial expression, verbal comment, or body language, and it can also be tangible, such as penalties, chores, or the removal of privileges.

When a child's behavior is punished or disciplined, it is optimal to offer the punishment immediately after the behavior, so children can clearly understand the connection between their behavior and the consequence. It is also best for the caregiver to have a healthy, positive relationship with the child and to remain calm but firm. If the parent or caregiver becomes frustrated or upset, this emotion will escalate the situation and decrease the likelihood that the child will learn from the punishment.

LIFE HACKS

Don't Fall for the Reinforcement Trap!

Children are highly responsive to reinforcement and punishment, and sometimes caregivers are unaware of how their responses can shape children to become more stubborn and argumentative in the future. Imagine a parent is grocery shopping with their preschooler, who wants a colorful candy. The parent does not want to give the child the candy, due to its cost, poor nutritional value, or any other reason. A three-year-old may respond by crying, pleading, stomping their feet, and having a full-blown tantrum in the grocery store. If the parent responds to the tantrum by giving in and allowing the child to have the candy, they are reinforcing and encouraging future tantrum behavior. If the parent gives in after two minutes, that teaches the child they need to protest and cry for at least two minutes in the future, so they will start to have tantrums that last five minutes in length. If parents give in after five minutes, the next tantrum could be even longer.

So how should a parent respond to this situation? Well, if you want to discourage your child from acting out in public and using tantrums to win arguments, you will need to take a deep breath and endure the tantrum. This means not caving and giving in, but also not escalating the situation by yelling or becoming upset yourself. Staying calm, cool-headed, and patient while ignoring the onlooking grocery shoppers is the best long-term solution. You could also try simply distracting the child with a silly question, such as, *"What do you think a mix between a walrus and a unicorn would look like?"* or talking to them about the yummy dinner plan for the evening. Distraction can be an impressive tool for many difficult parenting moments!

Regardless of which of these techniques you choose for not reinforcing the tantrum, the child will calm down and realize they cannot win arguments—or candy—this way. (They still might find alternative approaches to persuading you they need a sweet treat in the future, though.)

For punishment to be most effective, the penalty should also be logical and match the behavior it is discouraging. Natural punishment is what happens when a caregiver does not interfere and lets nature takes its course. For instance, if a child is stacking chairs, climbs on them, and falls off, the natural punishment is the physical pain and discomfort from falling off the chairs. For safety reasons, however, natural punishment is not always ethical, safe, or moral. Logical punishment results when a caregiver intervenes and responds to a child's behavior in a way that offers a rational consequence for their behavior (Mageau et al., 2018). For instance, a young child who throws their juice will need to help clean it up, and a child who pushes another will

need to say they are sorry. Often, logical punishment helps children to understand connections as well as cause and effect and may need to be applied only a small number of times.

Logical punishment is more effective than illogical punishment, which is a penalty that does not conceptually fit a targeted behavior. Examples may include: yelling at a child who spills juice, spanking a child who draws on a wall, or sending a child who is overly loud from excitement to an extended time-out. These uses of illogical punishment might frustrate the child and teach them not to do these behaviors, but it will likely require more trials and attempts to successfully discourage the target behavior. In some cases, use of illogical punishment does not discourage a child from performing the undesired behavior, but rather teaches them not to be caught doing it, and may negatively affect their trust for and relationship with their caregiver.

IT DEPENDS

Are Time-outs Logical?

When spanking decreased in popularity as a child disciplinary technique, time-outs began to rise to ubiquity. However, they are not the ideal response to all childhood misbehaviors. When used correctly, time-outs can allow an overwhelmed child to calm down and find time to regulate. Time-outs are also beneficial and logical when they are connected conceptually to the undesired target behavior. For instance, if siblings are fighting and the chance of someone getting hurt is increasing, a time-out can help de-escalate the situation, remove children from a potentially harmful situation, and eliminate their opportunity to hurt another person. Time-outs are also effective when caregivers check in with children afterwards to discuss the behavior and why calming down was important.

However, in some daycare and home settings, time-outs can be misused and overused. Time-outs would be an illogical punishment choice for a child who will not eat their vegetables, clean their room, or get dressed for school. In these situations, removing the child and letting them escape their obligation may reward and reinforce their disobedience. Time-outs are also less effective when the child is given no explanation or teachable moment to help them learn more desired behaviors, when time-outs are excessive in length, or when the child is left without follow-up or supervision (James, 2020).

LINK TO LEARNING

Teaching children what not to do can be exhausting. Watch this video about conflict, discipline, and punishment (https://openstax.org/r/104Conflict) to learn more.

Corporal Punishment

One type of discipline that relies on the use of bodily control is corporal punishment. Corporal punishment is physical punishment and can include things like slapping the back of a child's hands, restraining a child, and spanking or hitting a child. Spanking, or hitting a child's backside with an open hand, a belt, a switch, a wooden paddle, or another object, was relatively common for many years. In 1975, more than 85 percent of households surveyed said it was a main discipline or punishment technique. Starting in the 1980s, spanking started to decrease in popularity, with verbal discouragement, time-outs, and the ignoring of problematic behavior gradually increasing as strategies. As of 2017, spanking was still used in an estimated 37 percent of U.S. households (Mehus & Patrick, 2021; Finkelhor et al., 2019).

Many individuals who were spanked develop healthy relationships with their parents and are not abusive as adults. However, this positive finding cannot be credited to spanking. In fact, research has found no direct association between spanking and positive outcomes. Compared to children who were not spanked by their parents, children who were spanked display more aggressive and disruptive behaviors and have slower vocabulary development in early childhood (Gershoff & Grogan-Kaylor, 2016). As outlined in Table 6.2, several

research studies have consistently found use of corporal punishment to be highly associated with a range of negative outcomes for children.

Outcome	Example
Short-term disobedience	Spanking increases frustration in children and is linked with more short-term defiance and problem behaviors.
Long-term disobedience	Spanking does not reduce temptation or guilt over the long term.
Low moral internalization	Spanking is less effective than other techniques in helping children to learn new values and morals.
Aggression	Spanking is linked with more aggressive behaviors in children.
Mental health problems	Spanking is linked with anxiety, depression, low self-esteem, and hyperactivity.
Criminal behavior	Spanking is linked with delinquency and vandalism.
Conflictual parent-child relationships	Spanking is linked with strained or poor family relationships, and less vulnerability and disclosure.
Risk of child abuse	Spanking increases the risk that children will be the recipients of child abuse.

TABLE 6.2 Outcomes of Corporal Punishment (source: Gershoff, 2013; Gershoff & Grogan-Kaylor, 2016)

Starting in 1979, Sweden made spanking and corporal punishment illegal. In 1990, the United Nations passed the Convention on the Rights of the Child, which 196 countries have ratified—more than have signed on to any other human rights treaty (United Nations, 1990). In addition, seventy-two countries have passed legislation to make spanking and corporal punishment illegal.

The only United Nations member state that has not yet ratified the Rights of the Child is the United States. Spanking also remains legal in the United States, despite advice from the Academy of American Pediatrics and the American Psychological Association that states corporal punishment is ineffective and leads to more defiance, aggression, and risk of child abuse (AAP, 2018; Glicksman, 2019).

Child Abuse and Neglect

Despite being illegal in more than 100 countries, corporal punishment in isolation is not considered child abuse. However, much of the research indicates that it has negative outcomes highly similar to those of child abuse, and that young children have similar negative responses to both (Gershoff & Grogan-Kaylor, 2016).

Child abuse is drastic, harsh treatment that compromises and undermines the healthy development of a child. Child abuse can take several forms, including physical abuse, sexual abuse, emotional abuse, and neglect (Norman et al., 2012). Physical abuse includes the intentional bodily harm and injury of a child, often as an act of intimidation, punishment, or frustration. Sexual abuse is the inappropriate touching, photographing, or disrobing of a child. Emotional abuse consists of unrestrained and severe yelling, tormenting, intimidating, controlling, or demeaning of a child. Finally, neglect is failure to provide the necessities of life or the support to flourish and develop healthfully, and it can include physical neglect such as withholding food, shelter, new clothing, and hygiene products, or emotional neglect such as withholding attention and love. Young children between the ages of three and six years old who are experiencing abuse or neglect are more likely to act out at daycare or preschool. They appear overly tired, strained, or worn out, and have difficulty playing with same-aged peers; they also may cry more frequently for unexplained reasons. Table 6.3 presents the prevalence of abuse in the United States as a percentage of the population aged zero to seventeen, though it should be noted

that many researchers believe that child abuse and neglect are still underreported (Massullo et al., 2023).

Subtypes of Maltreatment	Prevalence in Children between 0 and 17 Years
Neglect	25.2%
Physical abuse	11.5%
Sexual abuse	4.1%
Emotional abuse	3.5%

TABLE 6.3 Prevalence of Child Abuse and Neglect in United States (source: Kim et al., 2017)

Children who experience maltreatment are at elevated risk for emotional problems such as anxiety and depression, and behavioral problems such as ADHD, conduct problems, and aggression. Moreover, children who experience abuse and neglect are more likely to struggle academically, cognitively, and with interpersonal relationships. Over the lifespan, child abuse and neglect are related to increased prevalence of psychological disorders such as bipolar disorder, borderline personality disorder, PTSD, and substance abuse (Felitti et al., 1998; Morris & Hays-Grudo, 2023). Finally, long-term stress associated with child abuse increases the risk of inflammatory physical diseases such as heart disease, stroke, type 2 diabetes, and some cancers (Lippard et al., 2019). Broadly speaking, early childhood traumatic experiences—whether from abuse, unstable home environments, unsafe environments, or natural disasters—can increase multiple child development risks. However, early intervention and support can foster resilience in children regardless of the type of adverse experience (National Child Traumatic Stress Network, 2024; Masten & Barnes, 2018).

In most regions of the United States and Canada, child abuse and neglect can be reported by calling Child Protective Services (CPS). CPS is an organization that includes social workers who can meet with families and help provide resources to prevent further abuse. Services include access to counseling, anger management classes, addiction services, unemployment services, housing and shelters, and food banks. More than a third (37.5 percent) of households with children between the ages of zero and seventeen experience a visit from Child Protective Services in the United States (Kim et al., 2017). In many countries, health-care and educational professionals are required to report suspicions of abuse and neglect, but they may encounter barriers to reporting, miss signs of abuse, or feel that they lack appropriate training to confidently report concerns (Gubbels et al., 2021; Perrigo et al., 2023)

A common misconception is that CPS seeks to remove children from their parents in all cases. However, social workers are trained to use removal as a last resort only, and often keeping families together in a safe situation is the main goal. Moreover, family separation for Indigenous and racialized children is known to be problematic. Indigenous children make up 50 percent of those in foster care in Canada despite being only 5 percent of the population (Newland, 2021)

LINK TO LEARNING

If you are concerned about or know someone experiencing child abuse, reach out to the Childhelp National Child Abuse Hotline (https://openstax.org/r/104Childhelp) for help. Call or text 1-800-422-4453 or chat through their website to receive confidential support.

Influence of Siblings

Siblings are often our first peers and offer many interactions to help us develop our social, emotional, and cognitive skills (Figure 6.16). Sibling interactions begin from birth, but they become much more intense,

intimate, and rewarding once both siblings are able to communicate verbally. Whether older, younger, or the same age, like twins or triplets, siblings can be biological relatives who share one or both parents, step-siblings, adoptive or foster siblings, or close cousins. Research on siblings is highly difficult because their age difference can range from nine months to more than nineteen years, influencing the types of interactions they will have with each other. In this section, we'll discuss the benefits and drawbacks of sibling relationships, of different family sizes, and of birth order.

FIGURE 6.16 Siblings can provide many opportunities for positive developmental growth. (credit: modification of work "Sisters reading" by Alyssa Sieb/nappy, Public Domain)

LINK TO LEARNING

Our siblings are our first playmates. Watch this video about the impact of siblings on child development (https://openstax.org/r/104Siblings) to learn more.

The Benefits and Drawbacks of Siblings

Having a sibling in the home during early childhood has been associated with increased opportunities for play, support, and emotional bonding. A sibling who is close in age (within five or six years) can offer companionship in new situations, healthy challenges in learning conflict resolution and communication skills, and knowledge about the world. Younger siblings tend to observe their older siblings, and are quick to learn behavioral skills such as self-feeding, dressing, and outdoor play. Older siblings also benefit and show higher levels of empathy, perspective taking, and leadership from mentoring their younger sibling (Borairi et al., 2023).

However, sibling conflict and sibling rivalry are exceedingly common. Observational studies in young children's homes find about eight conflicts per hour (Tucker & Finkelhor, 2015). Siblings often tease, jeer, and taunt each other, share sarcastic, cynical, or contemptuous facial expressions, and push, pull, and physically control one another. Although sibling conflict may be alarming, most of the time it allows for healthy relationship development. Intense emotional distress and risk of physical injury tend to be rarer than other forms of sibling conflict, but caregivers need to know their children and understand when to intervene to ensure their safety. Sibling rivalry tends to decrease if siblings have complementary temperament styles and better communication skills, if both receive love and attention from their parents, and if parents do not have an explicit favorite.

Family Size

Sibling relationships become more complex in larger families. Overall, families with fewer children tend to have more financial resources, time, and attention to dedicate to each child, whereas larger families with more children tend to have fewer resources but more rules and more requirements for each child to contribute to

chores and household duties (Blaabaek et al., 2020). Although children in larger families do not receive as much one-on-one focus from their parents, they receive more companionship and interactions from their siblings (Figure 6.17).

FIGURE 6.17 Children in large families spend less time one-on-one with parents but more time socializing with their siblings. (credit: modification of work "family" by Alyssa Sieb/nappy, Public Domain)

Children without siblings often engage in much more interaction with parents and other adults and less with same-age peers. Although some believe that single children are spoiled and lack development in empathy, sharing, and conflict resolution, research has not supported this description. Instead, single children tend to have high levels of empathy and kindness, self-esteem, and achievement (Goisis et al., 2023). Those with access to same-age peers through daycare or preschool often also show high levels of social competence, friendliness, and conflict resolution skills. The one area in which single children may struggle is communication with other children, because they may be more familiar and comfortable with speaking to adults.

Birth Order

Sigmund Freud's contemporary and colleague Alfred Adler was the first psychologist to hypothesize about birth order effects, which are personality and behavioral characteristics assumed to derive from being the oldest, middle, or youngest sibling in a family (Adler, 1964). According to Adler, the oldest child is more responsible, conservative, achievement-driven, and leader-like. The middle child or children are thought to be emotionally withdrawn, jealous, stubborn, and avoidant. The youngest child is a good-humored, fun-loving entertainer who lives for the moment.

Although birth order has been linked with academic achievement, with younger siblings less likely to attend post-secondary education, research indicates that this may be an effect of parent-child quality time rather than birth order (Price, 2008). Older siblings may benefit from having more individual attention from their parents before their next sibling is born, and later children may lack that advantage (Booth & Kee, 2009).

Overall, empirical research on birth order effects has not supported the birth-order theory. This may be due to the complexity of studying siblings. To conduct large-scale scientific research, researchers would need many families with a similar family structure, perhaps two married parents and three children under the age of eighteen. However, the gender and age of the siblings, the age differences between them, whether they were biological, step-, or adoptive siblings, and whether they lived together full-time or part-time would also influence the findings of the study. Families are so incredibly diverse that leading experts in the area have commented on how difficult it would be to find any evidence for birth order effects.

Divorce and Children

Around 30 percent of children live with a divorced, separated, unmarried, or remarried parent (Anderson et al., 2022). Divorce is likely to increase stress among caregivers and children, create financial strain, and decrease the amount of time children spend with their caregivers. Children of divorce are more likely to experience anxiety, disruptive behaviors at school, and lower academic achievement for two years following a parental separation (Miralles et al., 2021). Divorce is particularly likely to affect children's outcomes when they are old enough to understand the seriousness of the situation but still young enough to depend heavily on their parents for daily caregiving, meal preparation, and transportation, typically between the ages of seven and fourteen (Baker & Ben-Ami, 2011).

Several factors influence a child's well-being during a divorce. Children who are more prone to worry, have anxious temperaments, or blame themselves are more at risk of adverse outcomes. In addition, parents who actively blame their ex-partners, who rely on their children for emotional or financial support, or who put the children in the role of mediator have been found to make the separation process more distressing for children (Figure 6.18). Table 6.4 considers both protective and risk factors.

FIGURE 6.18 Children who are put in the role of messenger or mediator during a divorce are especially at risk of negative outcomes. (credit: "A little girl using a smart phone in public" by Bicanski/Wikimedia Commons, CC0 1.0)

Protective Factors for Child Well-Being	Risk Factors for Child Well-Being
Ex-partners remaining civil around children	Ex-partners arguing and fighting
Ex-partners cooperating for child's well-being	Ex-partners competing for child's love
Allowing child to see both parents regularly	Reducing child's time with family members
Allowing a child to feel strong emotions	Relying on children for emotional support
Having enough financial resources	Relying on children for financial support
Explaining divorce in age-appropriate ways	Using children as mediator
Allowing a child to be a child	Expecting a child to grow up fast

TABLE 6.4 Protective and Risk Factors during a Divorce (source: Smith-Greenaway & Clark, 2017)

However, not all divorces are equal. Divorce may be beneficial to child well-being if it helps reduce exposure to

abuse, domestic violence, disruptive and unhealthy communication patterns, or unhealthy parent-parent relationships. Children may also endure their family separation better if both parents remain active in their lives, explain to them in an age-appropriate way that the divorce was not the child's fault, and do not compete for love or put the child in the role of a mediator. Allowing a child to process their emotions in an age-appropriate way is also beneficial to their well-being.

The shift from a dual-parent to a single-parent household will likely increase the financial and time strain experienced by families. Financial strain comes from the pressure to provide housing, food, clothes, and recreational activities within a family's new and often constrained economic means. That is, even if both parents are financially supporting children after divorce, which is not always the case, they may bear the added cost of paying for two homes and two sets of utility bills. Divorced mothers are at particular risk for financial strain; they are three times as likely to live in poverty as married couples (Bayaz-Öztürk, 2018).

Time strain refers to stresses on the amount of high-quality, one-on-one time that children can spend with their parents and caregivers. Divorced parents who may be required to work extra hours, take a second job, or perform all domestic labor themselves report feeling exhausted and unable to meet their children's emotional needs at times. Unlike those in dual-parent households, for instance, divorced and separated parents do not always reliably have a teammate to help them pick children up after school or bathe them while dinner preparations are underway.

Divorced parents may find support by asking extended family members, neighbors, friends, and other single parents to help provide a care network. When grandparents, other divorcees, or friends can help with childcare, errands, or daily tasks, they can ease the time strain and even the financial strain experienced in divorced families.

References

Adler, A. (1964). *Problems of neurosis*. Harper Torchbooks.

American Academy of Pediatrics. (2018). Effective discipline to raise healthy children. *Pediatrics, 142*(6). https://doi.org/10.1542/peds.2018-3112

Anderson, L. R., Hemez, P. F., & Kreider, R. M. (2022). *Living arrangements of children: 2019*. U.S. Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2022/demo/p70-174.pdf

Baker, A. J. L., & Ben-Ami, N. (2011). Adult recall of childhood psychological maltreatment in "Adult Children of Divorce": Prevalence and associations with concurrent measures of well-being. *Journal of Divorce and Remarriage, 52*(4), 203–219. https://doi.org/10.1080/10502556.2011.556973

Baumrind, D. (1966). Effects of authoritative parental control on child behavior, *Child Development. 37*(4), 887–907. https://doi.org/10.2307/1126611

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology, 4*(1), 1–103. https://doi.org/10.1037/h0030372

Bayaz-Öztürk, G. (2018). Anti-poverty effects of in-kind transfers among divorced or separated women in the United States. *Poverty & Public Policy*, *10*(1): 57–80. https://doi.org/10.1002/pop4.203

Blaabaek, E. H., Jaeger, M. M., & Molitoris, J. (2020). Family size and educational attainment: Cousins, contexts, and compensation. *European Journal of Population, 36*(3), 575–600. https://doi.org/10.1007/s10680-019-09543-y

Booth, A. L., & Kee, H. J. (2009). Birth order matters: The effect of family size and birth order on educational attainment. *Journal of Population Economics, 22*(2), 367–397. http://dx.doi.org/10.1007/s00148-007-0181-4

Borairi, S., Plamondon, A., Rodrigues, M., Sokolovic, N., Perlman, M., Jenkins, J. (2023). Do siblings influence one another? Unpacking processes that occur during sibling conflict. *Child Development, 94*(1), 110–125. https://doi.org/10.1111/cdev.13842

Clark, T. T., Yang, C., McClernon, F. J., Fuemmeler, B. F. (2015). Racial differences in parenting style typologies and heavy episodic drinking trajectories. *Health Psychology, 34*(7), 697–708. https://doi.org/10.1037/hea0000150

Cline, F. & Fay, J. (1990). *Parenting with love and logic*. NavPress.

Climent-Galarza, S., Alcaide, M., Garcia, O. F., Chen, F., & Garcia, F. (2022). Parental socialization, delinquency during adolescence and adjustment in adolescents and adult children. *Behavioral Sciences, 12*(11). https://doi.org/10.3390/bs12110448

Deater-Deckard, K., Lansford, J. E., Dodge, K. A., Oburu, P., Pastorelli, C., Skinner, A. T., Tapanya, S., Uribe, T. L. M., Zelli, A., Al-Hassan, S. M., Malone, P. S., Alampay, L. P., Sorbring, E., Bacchini, D., Bombi, A. S., Bornstein, M. H., Lei, C., & DiGiunta, L. (2011). The association between parental warmth and control in thirteen cultural groups. *Journal of Family Psychology, 25*(5), 790–794. https://doi.org/10.1037/a0025120

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627–668. https://doi.org/10.1037/0033-2909.125.6.627

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The adverse childhood experiences (ACE) study. *American Journal of Preventative Medicine, 14*(4), 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8

Finkelhor, D., Turner, H., Wormuth, B. K., Vanderminden, J., & Hamby, S. (2019). Corporal punishment: Current rates from a national survey. *Journal of Child and Family Studies, 28,* 1991–1997. https://doi.org/10.1007/s10826-019-01426-4

Gershoff, E., & Grogan-Kaylor, A. (2016). Spanking and child outcomes: Old controversies and new meta-analyses. *Journal of Family Psychology, 30*(4), 453–469. https://doi.org/10.1037/fam0000191

Gershoff, E., (2013). Spanking and child development: We know enough now to stop hitting our children. *Child Development Perspectives, 7*(3), 133–137. https://doi.org/10.1111/cdep.12038

Glicksman, E. (2019). Physical discipline is harmful and ineffective. *Monitor on Psychology, 50*(5), 22.

Goisis, A., Chanfreau, J., Moulton, V., & Ploubidis, G. B. (2023). Only children and cognitive ability in childhood: A cross-cultural analysis over 50 years in the United Kingdom. *Population and Development Review, 49*(2), 319–349. https://doi.org/10.1111/padr.12560

Gubbels, J., Assink, M., Prinzie, P., & Put, C. E. V. D. (2021). Why healthcare and education professionals underreport suspicions of child abuse: A qualitative study. *Social Sciences, 10*(3), 98. https://doi.org/10.3390/socsci10030098

Haslam, D., Poniman, C., Filus, A., Sumargi, A., & Boediman, L. (2020). Parenting style, child emotion regulation, and behavioral problems: The moderating role of cultural values in Australia and Indonesia. *Marriage & Family Review, 56*(4), 320–342. https://doi.org/10.1080/01494929.2020.1712573

James, C. (2020, February 6). Child development—The time-out controversy: Effective or harmful? Indiana University School of Medicine. https://medicine.iu.edu/blogs/pediatrics/child-development-the-time-out-controversy-effective-or-harmful

Kim, H., Wildeman, C., Jonson-Reid, M., & Drake, B. (2017). Lifetime prevalence of investigating child maltreatment among US children. *American Journal of Public Health, 107*(2), 274–280. https://doi.org/10.2105/ajph.2016.303545

Kuppens, S., & Ceulemans, E. (2019). Parenting styles: A closer look at a well-known concept. *Journal of Child & Family Studies, 28*(1), 168–181. https://doi.org/10.1007/s10826-018-1242-x

Lippard, E. T. C., & Nemeroff, C. B. (2019). The devasting clinical consequences of child abuse and neglect: Increased disease vulnerability and poor treatment response in mood disorders. *The American Journal of Psychiatry, 177*(1), 1–96. https://doi.org/10.1176/appi.ajp.2019.19010020
Loveland, K. K., & Olley, J. G. (1979). The effect of external reward on interest and quality of task performance in children of high and low intrinsic motivation. *Child Development, 50*(4), 1207–1210. https://doi.org/10.2307/1129350
Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interactions. *Handbook of Child Psychology,* 1–101.
Mageau, G. A., Lessard, J., Carpentier, J., Robichaud, J, Joussemet, M., & Koestner, R. (2018). Effectiveness and acceptability beliefs regarding logical consequences and mild punishments. *Journal of Applied Developmental Psychology, 54*, 12–22. https://doi.org/10.1016/j.appdev.2017.11.001
Massullo, C., De Rossi, E., Carbone, G. A., Imperatori, C., Ardito, R. B., Adenzato, M., & Farina, B. (2023). Child maltreatment, abuse, and neglect: An umbrella review of their prevalence and definitions. *Clinical Neuropsychiatry, 20*(2), 72–99. https://doi.org/10.36131/cnfioritieditore20230201
Masten, A. S., & Barnes, A. J. (2018). Resilience in children: Developmental perspectives. *Children (Basel, Switzerland), 5*(7), 98. https://doi.org/10.3390/children5070098
Mehus, C. J., & Patrick, M. E., (2021). Prevalence of spanking in US national sample of 35-year-old parents from 1993 to 2017. *JAMA Pediatrics, 175*(1), 92–94. https://doi.org/10.1001/jamapediatrics.2020.2197
Miralles, P., Godoy, C., & Hidalgo, M. D. (2021), Long-term emotional consequences of parental alienation exposure in children of divorced parents: A systematic review. *Current Psychology, 42*, 12055–12069. https://doi.org/10.1007/s12144-021-02537-2
Morris, A. S.. & Hays-Grudo, J. (2023). Protective and compensatory childhood experiences and their impact on adult mental health. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA), 22*(1), 150–151. https://doi.org/10.1002/wps.21042
Mowen, T. J., & Schroeder, R. D. (2018). Maternal parenting style and delinquency by race and the moderating effect of structural disadvantage. *Youth & Society, 50*(2), 139–159. https://doi.org/10.1177/0044118X15598028
National Child Traumatic Stress Network. (2024). *How early childhood trauma is unique.* https://www.nctsn.org/what-is-child-trauma/trauma-types/early-childhood-trauma/effects
Neubauer, A. B., Schmidt, A., Kramer, A. C., & Schmiedek, F. (2021). A little autonomy support goes a long way: Daily autonomy-supportive parenting, child well-being, parental need fulfillment, and change in child, family, and parent adjustment across the adaptation in the COVID-19 pandemic. *Child Development, 92*(5), 1679–1697. https://doi.org/10.1111/cdev.13515
Newland, E. (2021). Indigenous children in Canada's foster care system: Bill C-92 and the importance of cultural identity. *Children's Legal Rights Journal, 42*(1), 59.
Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Van, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLOS Medicine, 9*(11). https://doi.org/10.1371/journal.pmed.1001349
Perrigo, J. L., Palmer Molina, A., Hurlburt, M. S., & Finno-Velasquez, M. (2023). Exploring the drivers of child maltreatment under-and overreporting: A qualitative study. *Families in Society: The Journal of Contemporary Social Services*, 10443894231187441.
Pinquart, M., & Kauser, R. (2018). Do the associations of parenting styles with behavior problems and academic achievement vary by culture? Results from a meta-analysis. *Cultural Diversity & Ethnic Minority Psychology, 24*(1), 75–100. https://doi.org/10.1037/cdp0000149
Price, J. (2008). Parent-child quality time: Does birth order matter? *The Journal of Human Resources, 43*(1), 240–265. https://dx.doi.org/10.2139/ssrn.767444
Robichaud, J., Lessard, J., Labelle, L., & Mageau, G. A. (2020). The role of logical consequences and autonomy support in children's anticipated reactions of anger and empathy. *Journal of Child and Family Studies, 29*(6), 1511–1524. https://doi.org/10.1007/s10826-019-01594-3
Roubinov, D. S., & Boyce, W. T. (2017). Parenting and SES: Relative values or enduring principles? *Current Opinions in Psychology, 15,* 162–167. https://doi.org/10.1016%2Fj.copsyc.2017.03.001
Skinner, B. F. (1938). *Behavior of organisms.* Appleton-Century.
Smith-Greenaway, E., & Clark, S. (2017). Variation in the link between parental divorce and children's health disadvantage in low and high divorce settings. *Population Health, 3,* 473–486. https://doi.org/10.1016/j.ssmph.2017.04.004
Tavassolie, T., Dudding, S., Madigan, A. L., Thorvardarson, E., & Winsler, A. (2016). Differences in perceived parenting styles between mothers and fathers: Implications for child outcomes and marital conflict. *Journal of Child and Family Studies, 25*(6), 2055–2068. https://doi.org/10.1007/s10826-016-0376-y
Tucker, C. J., & Finkelhor, D. (2015). The state of interventions for sibling conflict and aggression: A systematic review. *Trauma, Violence, and Abuse,* 1–11. https://doi.org/10.1177/1524838015622438
United Nations. (1990). *Convention on the rights of the child.* United Nations Human Rights Office of the High Commissioner. https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child
Villarejo, S., Garcia, O. F., Alcaide, M., Villarreal, M. E., & Garcia, F. (2024). Early family experiences, drug use, and psychosocial adjustment across the lifespan: Is parental strictness always a protective factor? *Psychosocial Interventions, 33*(1), 15–27. https://doi.org/10.5093/pi2023a16
Werchan, D. M., Ku, S., Berry, D., & Blair, C. (2023). Sensitive caregiving and reward responsibility: A novel mechanism linking parenting and executive functions development in early childhood. *Developmental Science, 26*(7). https://doi.org/10.1111/desc.13293
Yim, E. P. (2022). Effects of Asian cultural values on parenting style and young children's perceived competence: A cross-cultural study. *Frontiers in Psychology, 13.* https://doi.org/10.3389/fpsyg.2022.905093

6.4 Social Contexts: Peers, Play, and Friendship in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the nature of friendships in early childhood
- Explain the role of play in social and emotional development
- Identify types of aggression exhibited in early childhood
- Identify the motivation for social withdrawal in early childhood
- Identify prosocial behavior exhibited in early childhood

It just keeps happening. Laura's caregiver grandparents have received yet another phone call from her daycare center saying she has been disruptive, vocal, aggressive, and disobedient. They've been warned that if Laura doesn't calm down and comply with instructions, she may be dismissed from the center, and they'll need to find new childcare.

Laura's grandparents are trying to teach her positive play behaviors like sharing and taking turns, but their sweet baby has grown into a frustrated, explosive four-year-old who easily becomes overwhelmed by the world around her. They hoped that it was just a phase, but the daycare director insists that Laura's behavior is unusual and possibly indicative of long-term aggression.

Laura's grandparents decide to face this head-on. They see their family doctor, modify Laura's diet, set an earlier bedtime, reduce screen time, provide more active sports outlets, and take her to play groups on the weekend to help foster better communication and social skills. They hope this will work out eventually, but they know for now they are taking the advice of experts and doing as much as they can.

In this section, you'll learn how young children begin to navigate their social world of peers and friends and develop the necessary skills to form lasting social bonds.

Peers and Friendship

After parents and siblings, peers are the largest socializing agent in young childhood. Peers are children who are similar in age, or in terms of their cognitive, physical, and emotional development. They are children's everyday acquaintances, their neighbors, their classmates at daycare and preschool, and other children they meet at playgrounds or play centers. Learning how to interact with peers is different from learning to interact with older siblings or adults; children often need to initiate play, communicate in age-appropriate ways, and make compromises such as sharing and turn-taking.

A unique type of peer is a friend. In developmental research, a friend is defined as someone you enjoy being around and look forward to seeing again, and who feels the same about you. Thus a friend is a peer with whom a child has developed a mutual affection and emotional attachment (Figure 6.19). Friendships are rewarding; they offer companionship, emotional support, and opportunities for cognitive, social, and emotional development.

FIGURE 6.19 Friendships in early childhood provide a host of developmental benefits. (credit: modification of work "best of friend" by Dimas Danardana/Flickr, CC BY 2.0)

Friendships in Development

Though the formation of friendships evolves as children grow and mature, at all ages it is based on proximity and similarity. The term **proximity** refers to the circumstance of living, schooling, or vacationing near each other and on a similar schedule so there is time to socialize. The degree of **similarity** or resemblance needed for friendship varies by developmental age, but can be based on a match of physical characteristics, interests and hobbies, or emotional temperament. Children enjoy meeting people with similar physical and demographic characteristics. Thus, friend selection in early childhood is typically based on superficial similarities such as favorite color, street address, or the letter of a child's first name.

LINK TO LEARNING

Peers and friends shape social development in childhood. Watch this video about friendship in childhood

(https://openstax.org/r/104ChildFriend) to learn more.

Outcomes of Friendship

Forming friendships in early childhood is enormously beneficial. Children who have more opportunities to play with friends tend to develop cognitively in terms of perspective-taking, emotionally in terms of empathy and compassion, academically in terms of motivation and achievement, and even physically in terms of gross motor development from having more opportunities for outdoor play. Table 6.5 shows how benefits of friendship in early childhood extend across all major domains of development.

Cognitive	Social	Emotional	Physical
Perspective-taking	Companionship	Self-esteem	Gross motor skills
Problem-solving skills	Communication skills	Secure attachment	Fine motor skills
Academic achievement	Conflict resolution skills	Self regulation and stress relief	Activity level
Executive function	Peer acceptance	Empathy and compassion	Balance and coordination

TABLE 6.5 Benefits of Friendship (source: Hanish et al., 2023)

Play in Early Childhood

Early childhood often marks the beginning of friendships that will change and grow over time. It is also a time of play, which fosters holistic development in all domains. Children begin to develop preferences for whom they play with and how they play, and they may have imaginary friends (Figure 6.20).

FIGURE 6.20 Play can help children develop cognitive, social, emotional, and physical skills. (credit: "Gilman Playground" by Seattle Parks and Recreation/Flickr, CC BY 2.0)

As you learned in Chapter 5 Physical and Cognitive Development in Early Childhood (Ages 3 to 6), Parten's work on social play shed light on its value in fostering social skills and relationships (Parten, 1932). Social play, such as associative and cooperative play, helps children develop communication skills, emotional regulation, and conflict resolution skills. Parten also found it an essential component in forming and maintaining friendships. For preschoolers, unstructured or child-led play is particularly important (Houser et al., 2016). It

teaches children to take turns, share, and cooperate with others. They learn to express their emotions and navigate social situations (Wang, 2022).

Play Preferences

Although all types of play can appear from ages five and onward, different children have play preferences that describe how they prefer to spend their free time. One type, **structured play**, often consists of organized games, crafts, songs, and activities led by teachers and parents, during which children follow along. Another type, **free play**, happens in unstructured time during which children can select their own activity, such as during a school recess, in an afterschool play center, or on the playground. During free play, when children are surrounded by same-age peers, they are better able to play in ways they most prefer.

LINK TO LEARNING

Play is the work of childhood. Watch this video about the different types of play (https://openstax.org/r/104Play) to learn more.

Some children may prefer to play with other children during free play. This can include playing one-on-one with another child in a *dyad*, or group of two. Overall, girls tend to select dyadic play more often than boys do. A pair of children may spend their free time talking, passing a ball, or doing a puzzle together. Social play can also include large-group play by three or more children. Groups can spend their time playing a physically active game such as tag, or pretend and dramatic play. Boys tend to gravitate towards large-group play more often than girls do, but large groups can be mixed-gender as well (Hanish et al., 2023).

LIFE HACKS

Can Adults Play?

Just like young children, adults can have a preference for play behavior. Perhaps you like to go out dancing with friends, or perhaps you'd rather stay in and read a book. Maybe you'd like to go out dancing but you're anxiously waiting for an invite from others. Just like children, adults can be social or introverted and shy. Regardless of your age, play is beneficial for all.

Sometimes adults worry they will be judged for playing, but consider the play they may already enjoy. Have you ever finished a jigsaw puzzle or a craft all by yourself? That's solitary play. What about sitting next to your best friend, independently scrolling on your phones or reading for pleasure? That's parallel play. Have you ever attended a painting class or a crafting workshop in which you shared materials with those around you but made your own piece? That's associative play. Finally, have you ever played an enthralling and competitive board game with others? That's social play.

We develop play skills early in childhood and continue to use them throughout our lifespan. Thus, if a child asks you to play, before you say no, consider your shared interests and play preferences. Perhaps you can kick a ball back and forth outside or engage in pretend play with dolls. If you aren't sure what to say, consider belting out some of your favorite song lyrics or just follow the child's lead. Most children thrive on play and interaction, so as a bonus you're helping boost their healthy development while you get to be silly too!

For some children, free play is an opportunity for solitary play, and they may spend their time with puzzles, skipping ropes, books, or blocks. Solitary play is considered beneficial and adaptive, because it has a constructive goal and allows for the development of new skills. A preference for solitary play is very different from social reticence, in which a child is alone and not engaged in an activity. A socially reticent child may just wander a playground, watching others play but not doing anything themselves, or they may sit idly waiting for free play to be over. Social reticence is not considered adaptive because there is no obvious goal, though if

infrequent it is not problematic.

During one episode of free play, the same child may engage in dyadic, group, and solitary play as well as socially reticent behavior. Over time, children who spend more time in group or dyadic play tend to be more social and outgoing, children who spend more time in solitary play tend to be more introverted (or low in extraversion), and children who spend more time displaying socially reticent behavior tend to be more anxious, socially rejected, and immature in terms of social emotional skills. These relationships are likely bidirectional in that we choose play environments that fit our preferences and personalities and are also shaped by our play environments. As in many areas of developmental psychology, our environment and our individual selves interact to shape our long-term development.

Imaginary Friends

Some children may not engage in social play but enjoy having an imaginary friend. Early theorists were concerned about imaginary friends and believed they were a sign of social ineptness, immaturity, or other developmental problems. However, empirical research has found the opposite (Armah & Landers-Potts, 2021). Children who have an active imaginary friendship tend to be higher in social competence, communication, and empathy (Gleason, 2017).

Aggressive Behavior

Prosocial skills do not come automatically to some children, who instead gravitate toward aggressive strategies in socializing with peers and friends. In early childhood, most aggression is physical and consists of purposeful harm or intimidation of harm toward people or property. It can have various causes, predictors, and outcomes.

Causes of Aggression

Not all physical aggression has the same cause. Sometimes a child can be physically aggressive when overstimulated, frustrated, or reacting to a stressful situation. At other times a child may want to achieve a goal, such as regaining their toy from another child, delaying going to bed, or avoiding eating a disliked meal. Aggression can be targeted or not, and a child can be either the instigator or the reactor in an aggressive situation with a peer. Figure 6.21 offers a breakdown of the unique dimensions of physical aggression in childhood. Any combination of characteristics from across the two columns is possible. For instance, aggression can be hostile and targeted, or a child can be both antisocial and the reactor.

Dimension	Aggression Types	
Intention	**Instrumental** Child has a goal they want to achieve by being aggressive	**Hostile** Child is overwhelmed and frustrated by a situation
Directedness	**Targeted** Child has a clear target in mind to direct their aggression at	**Untargeted** Child had not planned target but is being disruptive in general
Catalyst	**Instigator** Child was the first to act in the situation that become aggressive	**Reactor** Child is reacting to an already happening situation
Position	**Attack** Child is aggressive as an attacker on another	**Defense** Child became aggressive due to feeling the need to defend themselves
Morality	**Antisocial** Child is being aggressive in a way that only helps themself	**Prosocial** Child is being aggressive to help others or defend others

FIGURE 6.21 In early childhood, children are likely to show a variety of aggression types, and knowing more about

the aggressive behavior can aid in teaching children to regulate their aggression (Mathieson & Crick, 2010). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Some children display high levels of hostile, reactive, untargeted aggression due to a lack of adaptive coping strategies. Teaching them social skills, relaxation techniques, and communication skills can help to decrease frequency and intensity of aggressive behavior. For other children who display instrumental, targeted behavior and who are commonly the instigator or attacker, other long-term interventions maybe be necessary, such as family therapy or cognitive behavioral therapy.

Physical aggression tends to peak in early childhood, at about the age of two or three, and to decrease as children start to develop stronger self-regulatory skills. However, in some children, high levels of physical aggression persist through adolescence and even beyond.

Predictors of Aggression

As you learned earlier, some aggression is normal for all children in early childhood. However, in some this aggression may be persistent or exist at a high, maladaptive level. Such maladaptive aggression is typically a result of a complex set of predictors including the environment, genes, and *epigenetics*—that is, the influence of environment on gene expression (Palumbo et al., 2018). In addition, aggression is associated with family size and maternal age. Parents who had their first child at a young age and families with more children are more likely to have aggressive children than parents who had their first child at an older age and have fewer children. In addition, parental stress levels, parental substance use, and parental hostility are major predictors of aggression in early childhood (Lee et al., 2022). Finally, children often learn aggressive behaviors from watching and mimicking family members. A parent who resolves conflict by yelling, slamming doors, or using corporal punishment is more likely to have a young child who displays aggressive behaviors (Stover et al., 2016).

LINK TO LEARNING

Aggressive behaviors can be very complex. Watch this video about some of the complexities of aggression (https://openstax.org/r/104Aggression) to learn more.

For some children but not all, physical aggression can also develop in response to peer interactions, as with reactive aggression. Children who are not accepted or are actively rejected by their peers, or who form friendships with other aggressive children, may be more likely to become aggressive over time (Ttofi et al., 2012). Children who belong to a friendship group of several aggressive children are more likely to bond and find companionship in being aggressive, and to reward each other for being aggressive.

Finally, aggression may arise from temporary and situational stress. Children who are experiencing stress at home, such as marital conflict or divorce, and children who are struggling at school may be more likely to display aggression. Children who have undiagnosed learning disabilities, communication problems, or sensory sensitivities may be more likely to display aggression to deal with their frustrating situation. The relationship between exposure to aggression and later expression of internalizing and/or externalizing problems in childhood is a highly individualized process (Reijntjes et al., 2010; Schoeler et al., 2018).

Outcomes of Aggression

Aggression is a concern to parents and teachers because it is linked with elevated risks for a variety of negative developmental outcomes. Children who are highly aggressive for a persistent length of time throughout their childhood are more likely to fall behind academically, to struggle to develop healthful and adaptive social emotional skills, have strained relationships with parents, siblings, friends, and teachers, and feel intensely angry and hostile toward the world around them. Severe aggression in young childhood is also linked with delinquency, school suspension and expulsion, and criminality in adolescence (Stover et al., 2016).

Social Withdrawal and Shyness

On the playground, some children might be prosocial and others aggressive. Still others may avoid interactions completely. This third type of children's social skills is observed among those who socially withdraw from interactions with others due to feelings of shyness or anxiety, or an interest in their own solitude. The term *social withdrawal* describes the removal of yourself from the peer group and avoidance of peer interactions. Neither shyness nor social withdrawal is the same as antisocial behavior.

The Approach-Avoidance Model

According to the approach-avoidance model, children may have high or low motivations for approach and avoidance. The *approach motivation* represents a child's desire to play and be with others. Children who prefer to play alone have a low approach motivation, and outgoing and highly social children have a high approach motivation. The *avoidance motivation* represents the child's desire to avoid negative evaluations or peer rejection. An anxious or fearful child has a high avoidance motivation, and a calm, confident child has a low avoidance motivation.

Using combinations of the approach and avoidance motivations, we can identify three types of social withdrawal: introversion, avoidance, and shyness (Figure 6.22). Introversion describes children who prefer to play alone and are happy to engage in solitary play. Avoidance is characteristic of children who withdraw from peers because they have been victimized or rejected from the peer group. Finally, shyness describes children who have both high approach and high avoidance; although they would like to play with others, they are fearful about how others may judge or perceive them or too nervous to invite themselves. Shyness tends to manifest on a playground in hovering and onlooking behavior. Children who have high approach and low avoidance are social.

	Low Approach	High Approach
Low Avoidance	**Introversion** Child is happy alone	**Social** Child is socially engaged with others
High Avoidance	**Avoidance** Child fearfully avoids others	**Shyness** Child wants to socialize but is fearful

FIGURE 6.22 Children's social experiences are shaped by their motivations to approach and/or to avoid social interactions (Rubin et al., 2009). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Predictors of Shyness

Shyness has biological components, such as faster resting heart rate, increased vagal tone (activity in the vagus nerve in the chest), heightened levels of the stress hormone cortisol, and increased breathing rate. Shyness is also tied to family factors, such as maternal anxiety and negative self-talk (Gunter et al., 2020). Young children who hear their parents worry a lot and express concerns about pleasing others are more likely to develop feelings of shyness (Volbrecht & Goldsmith, 2010). Finally, children who perceive ambiguous situations as dangerous or threatening are more likely to be fearful of social situations (Hummel et al., 2017). That is, shy children are more likely to judge neutral faces as being angry than their non-shy peers. This can be based on the child's temperamental shyness or on early exposure to threatening and adverse events (Gross, 2002)

Feelings of shyness tend to increase when children experience novel situations, are in intensely social situations, become the center of attention, or are being formally evaluated. Many children experience shyness at the start of a new school year when they are interacting with new classmates and a new teacher and adjusting to new academic expectations. For most children, this shyness subsides after a few weeks of school. But for some extremely shy children, feelings of anxiety and timidness persist throughout the school year.

Outcomes of Shyness

Feeling shy around others can inhibit the development of friendships, prevent children from practicing and using their social skills, and foster a sense of isolation and loneliness. Although moderate amounts of shy behavior can be healthy and typical, extremely shy children may experience a low sense of belonging, a high level of anxiety, and increased feelings of peer rejection (Jarcho et al., 2019). Though shyness is likely to vary across cultures, in those that value group-oriented goals it is less likely to pose any risk (Chen, 2019; Yiu et al., 2020). Addressing feelings of shyness and offering interventions by partnering shy children with more outgoing peers, teaching social skills, and offering cognitive behavioral therapy are all valuable strategies.

Prosocial Behavior

Early childhood is a time of budding social skills. The term **prosocial behavior** refers to cooperative, assertive, and socially competent interactions with others, such as helping, sharing, being kind, inviting others, and showing concern (Figure 6.23).

FIGURE 6.23 Playing board games requires many prosocial skills such as following rules, taking turns, and gracefully accepting winning or losing. (credit: modification of work “Board Games @ Springville Road” by Birmingham Public Library/Flickr, CC BY 2.0)

Children who display prosocial behavior often have good self-regulatory skills. That is, they can identify their emotions, they are able to calm themselves down when they are upset and frustrated, and they have developed adaptive coping strategies. Moreover, such children tend to show high levels of empathy (Warden & MacKinnon, 2001). Empathy requires both cognitive skills such as perspective taking and affective components such as emotional concern. Finally, children who are more prosocial tend to show high levels of cooperation. Cooperation is the ability to work with others both altruistically (to help them) and assertively (to help yourself), and it is neither passive and submissive nor dominant and aggressive.

Children who are prosocial tend to have parents who demonstrate and model prosocial skills. Parents who explain the rationale behind their expectations, and who model self-regulation, conflict resolution, and effective assertive communication techniques, are more likely to have prosocial children. However, children’s temperament can also influence the development of their prosocial skills. Those who are lower in reactivity, are higher in approach, and have greater positive affect are more likely to display prosocial skills. Prosocial behavior is linked with a variety of positive developmental outcomes such as happiness, friendship, and

academic achievement (van der Storm et al., 2022).

References

Armah, A., & Landers-Potts, M. (2021). A review of imaginary companions and their implications for development. *Imagination, Cognition and Personality*, *41*(1), 31–53. https://doi.org/10.1177/0276236621999324

Chen, X. (2019). Culture and shyness in childhood and adolescence. *New Ideas in Psychology, 53,* 58–66. https://doi.org/10.1016/j.newideapsych.2018.04.007

Gleason, T. R. (2017). The psychological significance of play with imaginary companions in early childhood. *Learning & Behavior. 45*(4), 432–440. https://doi.org/10.3758/s13420-017-0284-z

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39,* 281–291. https://doi.org/10.1017/s0048577201393198

Gunter, K., Youatt, E., & Pérez-Edgar, K. (2020). The biology of shyness and adapting to threat. In L.A. Schmidt & K. L. Poole (Eds.), *Adaptive shyness.* Springer. https://doi.org/10.1007/978-3-030-38877-5_6

Hanish, L. D., Xiao, S. X., Malouf, L. M., Martin, C. L., Goble, P. Fabes, R. A., DeLay, D., & Bryce, C. (2023). The benefits of buddies: Strategically pairing preschoolers with other-gender classmates promotes positive peer interactions. *Early Education and Development, 34*(5), 1011–1025. https://doi.org/10.1080/10409289.2022.2090773

Houser, N. E., Roach, L., Stone, M. R., Turner, J., & Kirk, F. L. (2016). Let the children play: Scoping review on the implementation and use of loose parts for promoting physical activity participation. *AIMS public health, 3*(4), 781-799. https://doi.org/10.3934/publichealth.2016.4.781

Hummel, A. C., Premo, J. E., & Kiel, E. J. (2017). Attention to threat as a predictor of shyness in the context of internalizing and externalizing behavior. *Infancy, 22*(2), 240–255. https://doi.org/10.1111/infa.12149

Jarcho, J. M., Grossman, H. Y., Guyer, A. E., Quarmley, M., Smith, A. R., Fox, N. A., Leibenluft, E., Pine, D. S., & Nelson, E. E. (2019). Connecting childhood wariness to adolescent social anxiety through the brain and peer experiences. *Journal of Abnormal Child Psychology*, *47*(7), 1153–1164. https://doi.org/10.1007/s10802-019-00543-4

Lee, J., Marshall, A. D., & Feinberg, M. E. (2022). Parent-to-child aggression, intimate partner aggression, conflict resolution, and children's social-emotional competence in early childhood. *Family Process, 61*(2), 823–840. https://doi.org/10.1111/famp.12701

Mathieson, L., C., & Crick, N. R. (2010). Reactive and proactive subtypes of relational and physical aggression in middle childhood: Links to concurrent and longitudinal adjustment. *School Psychology Review, 39*(4), 601–611. https://doi.org/10.1080/02796015.2010.12087745

Palumbo, S., Mariotti, V., Iofrida, C., & Pellegrini, S. (2018). Genes and aggressive behavior: Epigenetic mechanisms underlying individual susceptibility to aversive environments. *Frontiers in Behavioral Neuroscience, 12,* 117. https://doi.org/10.3389/fnbeh.2018.00117

Parten, M. B. (1932). Social participation among preschool children. *Journal of Abnormal and Social Psychology*, 27, 243–269.

Reijntjes, A., Kamphuis, J. H., Prinzie, P., Boelen, P. A., van der Schoot, M., & Telch, M. J. (2010). Prospective linkages between peer victimization and externalizing problems in children: A meta-analysis. *Aggressive Behavior, 37*(3), 215–222. https://doi.org/10.1002/ab.20374

Rubin, K. H., Coplan, R. J., & Bowker, J. C. (2009). Social withdrawal in childhood. *Annual Review of Psychology, 60*(1), 141–171. https://doi.org/10.1146/annurev.psych.60.110707.163642

Schoeler, T., Duncan, L., Cecil, C. M., Ploubidis, G. B., Pingault, J-B.(2018). Quasi-experimental evidence on short- and long-term consequences of bullying victimization: A meta-analysis. *Psychological bulletin, 144*(12), 1229–1246. http://dx.doi.org/10.1037/bul0000171

Stover, C. S., Zhou, Y., Kiselica, A., Leve, L., D., Neiderhiser, J. M., Shaw, D. S., Natsuaki, M. N., Scaramella, L. V. & Reiss, D. (2016). Marital hostility, hostile parenting, and child aggression: Associations from toddlerhood to school age. *Journal of the American Academy of Child and Adolescent Psychiatry, 55*(3), 235–242. https://doi.org/10.1016/j.jaac.2015.12.008

Ttofi, M. M., Farrington, D. P., & Lösel, F. (2012). School bullying as a predictor of violence later in life: A systematic review and meta-analysis of prospective longitudinal studies. *Aggression and Violent Behavior, 17*(5), 405–418. https://doi.org/10.1016/j.avb.2012.05.002

Van der Storm, L., van Lissa, C. J., Lucassen, N., Helmerhorst, K. O. W., & Keizer, R. (2022). Maternal and paternal parenting and child prosocial behavior: A meta-analysis using a structural equation modeling design. *Marriage & Family Review, 58*(1), 1–37. https://doi.org/10.1080/01494929.2021.1927931

Volbrecht, M. M. & Goldsmith, H. H. (2010). Early temperamental and family predictors of shyness and anxiety. *Developmental Psychology, 46*(5), 1192–1205. https://doi.org/10.1037/a0020616

Wang, C. (2022). The role of physical activity promoting thinking skills and emotional behavior of preschool children. *Psicologia, Reflexão e Crítica: Revista semestral do Departamento de Psicologia da UFRGS, 35.* https://doi.org/10.1186/s41155-022-00223-1

Warden, D., & MacKinnon, S. (2001). Prosocial children, bullies, and victims: An investigation of their sociometric status, empathy and social problem-solving strategies. *British Journal of Developmental Psychology, 21*(3), 367–385. https://doi.org/10.1348/026151003322277757

Yiu, W.Y.V., Choi, J.H., Chen, X. (2020). Shyness and adaptation across cultures. In L. A. Schmidt & K. L. Poole (Eds.), *Adaptive shyness.* Springer. https://doi.org/10.1007/978-3-030-38877-5_11

6.5 Media Exposure and Literacy in Early Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the media diets of children in early childhood
- Compare the positive and negative effects of media exposure in early childhood

Sanjay is obsessed with a cat game on his tablet. In the game, he can make a cat meow, talk, wave, and giggle. He is regularly found on his app making cat noises and giggling at the funny cat responses. His stepmother has noticed that he'd rather play his cat game than play outside, go to the park, or cuddle for story-time.

Sanjay is about to turn five and still does not know his alphabet, so his stepmother downloads a new alphabet learning game onto his tablet. She shows him how to play it once or twice and hopes that he'll be encouraged to play. But Sanjay shows no interest in the educational game; he'd rather just play the cat game and make noises. His stepmom is wondering what her next steps should be in trying to help him to develop pre-literacy skills.

Sanjay's experience is not unusual and illustrates the importance of considering media diet and exposure in this age group.

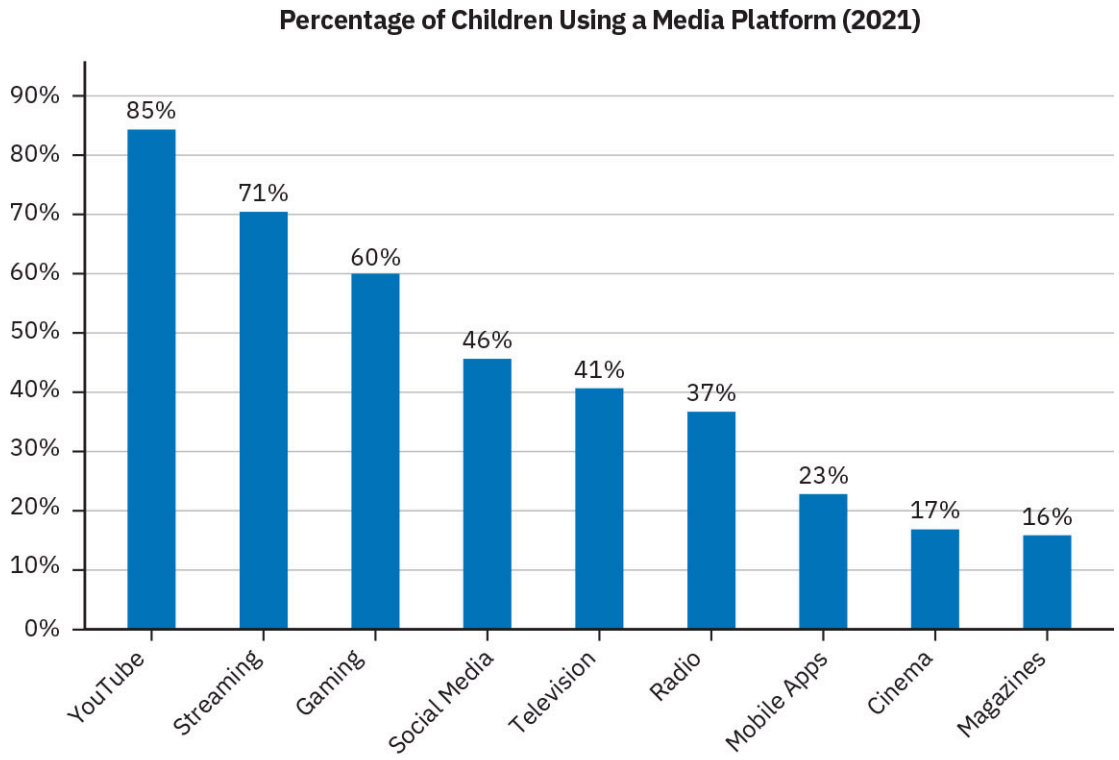
Media Diet

For as long as humans have lived in civilized societies, we have consumed media. In ancient times, this consisted of folklore, legends, and plays. In the industrialized era, media consumption included newspapers, radio, and early photography. By the 1980s, children's media included brightly colored picture books, cartoons on television, and songs by children's artists. Today, children consume 100 times more media imagery than

previous generations could, from streaming shows to apps and games on their tablets to songs and trivia on home smart speakers (Hawkey, 2019).

A **media diet** is the information to which people are exposed via mass media outlets such as television, music, video games, and electronic devices. Media diets include intentional exposure, such as a specific online videos children choose, and unintentional exposure, such as advertisements that pop up on a smartphone game. They can also include passive content that might not be noticed immediately such as background music in a shopping center, and more active content that grabs our attention such as a flashing strobe light advertising products on a billboard.

In 2011, a national survey indicated that young U.S. children tend to watch two hours of television per day and spend about one hour playing video games (Common Sense Media, 2011). Ten years later in 2021, young children's media consumption had increased to 3.5 hours per day and their options had diversified to include smartphones, video on demand, and online streaming (Figure 6.24). However, most children's media experts recommend that preschoolers should consume only one hour of high-quality educational programming per day and spend no time on any other type.



Source: Precise TV and Giraffe Insights. (2021). Kids and the Screen: Changing the Channel.

FIGURE 6.24 A large majority of children watch videos on YouTube or other streaming services such as Netflix and Disney+. (data source: Precise TV & Giraffe Insights; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Children and Media Exposure

In much the same way that observation of parents, peers, and siblings teaches children about the world around them, media exposure shows children the social norms and values of their culture and their world. Images on television are captivating, song lyrics are catchy, and characters in children's media can be inspiring, so children pay attention, encoding and retaining what they see and hear in the media.

Exposure to screens and electronic devices can both stunt and spur child development in certain circumstances. Children's early language skills tend to develop best when they are interacting with other

people face-to-face. Young children who spend too much time watching screens may not experience the beneficial interactions with their caregivers that help with facial recognition, language development, and social emotional intelligence. If television is being used as a babysitter and a substitute for high-quality time with caregivers, then this screen time is associated with children lagging in their cognitive and social emotional development.

LINK TO LEARNING

Watch this TEDx Talk about how the pace of fast-moving television shows influences the stimulation of the brain and child development outcomes (https://openstax.org/r/104TVInfluence) to learn more.

Children who spend extremely large amounts of screen time viewing content that is high in aggression may be more likely to display aggressive and disruptive behavior, hyperactive behaviors, and poor self-regulatory skills (Holmgren et al., 2023). Observing violent television shows, video games, or music can make children become more aggressive. Overall, those who consume more aggressive and violent media tend to display more violent behavior. But this association is complex.

Watching a superhero movie may not make all children more aggressive, but it can desensitize viewers to violence. Desensitization occurs when our brains stop reacting and become numb to a certain type of event. Children, teens, and adults who consume more violent media tend to be less reactive to violence and consider it more normative. Children who are desensitized to violence may be more likely to perceive violence and aggression as appropriate and morally justified, particularly if they witness a superhero or favorable character act aggressively. They may then be more likely to act aggressively. However, this is a complex chain reaction of desensitization, normalization, justification, and action (Figure 6.25). Certainly, not everyone who consumes violent media becomes aggressive themselves.

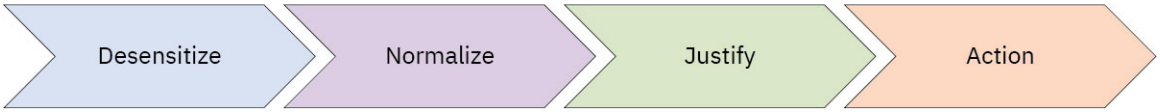


FIGURE 6.25 A possible pathway to explain the link between violence on television and aggression in children. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Still, some screen time is beneficial. Mobile educational games can be particularly helpful for early development because they can provide portable outlets for creativity, problem-solving, and interactions with others. Watching educational programs alongside a parent or caregiver and discussing what they see can be an especially effective way for children to comprehend new concepts, experiences, and ideas (Sanders et al., 2019). Screens can also help facilitate communication with family who live far away or to arrange playdates between friends following a move or, as recently happened, during a pandemic (Quinones & Adams, 2020). Using mobile devices to connect with extended family members provides increased emotional attachment, familial bonds, and companionship.

Watching educational programming alongside a family member has been tied to preschoolers' improvements in language development, literacy, numeracy, reasoning, and problem-solving. Children's ability to understand satire, metaphors, and hidden morals in stories, to be critical of advertising and marketing in media, and to break down messages and takeaways in film and television can all be enhanced through watching as a family. Children who consume media with a family member may be more likely to become critical thinkers (Hutton et al., 2020). Helping children navigate media usage in early childhood thus requires nuance, because not all media consumption is detrimental. The recommendations for using screens in a healthy way, based on Ponti et al., 2019, can help in early childhood and beyond.

- Avoid screen time one hour before bedtime, and do not have screens in children's bedrooms.
- Co-watch and be present when children are consuming media.
- Help children ask questions and think critically about what they are viewing, especially advertisements.

- Encourage screen use that allows for creative, educational interaction rather than passive viewing.
- Help children pick shows and videos that have positive messages and model age-appropriate behavior.
- Avoid using the TV for background noise.
- Encourage and maintain non-screen hobbies and interests.

References

Common Sense Media. (2011). *Zero to Eight: Children's Media Use in America.* https://www.ftc.gov/sites/default/files/documents/public_comments/california-00325%C2%A0/00325-82243.pdf

Hawkey, E. (2019). Media use in childhood: Evidence-based recommendations for caregivers. *CYF News.*

Holmgren, H. G., Stockdale, L., Shawcroft, J., Coyne, S. M., & Fraser, A. M. (2023). Toddlers and the telly: A latent profile analysis of children's television time and content and behavioral outcomes one year later in the US. *Journal of Children and Media,* 17(3), 1–20. https://doi.org/10.1080/17482798.2023.2195194

Hutton, J. S., Huang, G., Sahay, R. D., DeWitt, T., & Ittenbach, R. F. (2020). A novel, composite measure of screen-based media use in young children (ScreenQ) and associations with parenting practices and cognitive abilities. *Pediatric Research, 87*(7), 1211–1218. https://doi.org/10.1038/s41390-020-0765-1

Ponti, M. (2019). Screen time and preschool children: Promoting health and development in a digital world. *Paediatric Child Health, 28*(3), 184–192. https://doi.org/10.1093/pch/pxac125

Precise TV, & Giraffe Insights. (2021). *Kids and the screen: Changing the channel.*

Quinones, G. & Adams, M. (2020) Children's virtual worlds and friendships during the Covid-19 pandemic. *Video Journal of Education and Pedagogy, 5,* 1–18. https://doi.org/10.1163/23644583-bja10015

Sanders, T., Parker, P. D., Del Pozo-Cruz, B., Noetel, M., & Lonsdale, C. (2019). Type of screen time moderates effects on outcomes in 4013 children: Evidence from the longitudinal study of Australian children. *The International Journal of Behavioral Nutrition and Physical Activity, 16*(1), 117. https://doi.org/10.1186/s12966-019-0881-7

Key Terms

authoritarian parenting strict parenting style that focuses on obedience, authority, and following rules
authoritative parenting democratic parenting style that focuses on communication, empathy, warmth, and responsibility along with moderate to high levels of structure
autism spectrum disorder neurodevelopmental disorder characterized by difficulties in social communication and interaction as well as "restricted, repetitive patterns of behavior"
Big Five Factors trait theory of personality that describes differences along the five spectrums of extraversion, agreeableness, conscientiousness, neuroticism, and openness
emotion coaching parenting strategies and techniques that promote emotion development, including emotional intelligence and emotion regulation
emotional intelligence self-regulatory and interpersonal skills that allow us to understand the emotional states and needs of ourselves and others
ethnic-racial identity development set of theories in which children understand their ethnicity through stages of labeling, knowledge, and constancy
free play unstructured time in which children can choose their own activities
gender constancy third milestone in gender schema theory in which children understand that gender is stable and does not change based on clothes, hairstyle, or temporary experimentation with gender roles
gender schema theory theory in which children understand their gender through stages of labeling, stability, and consistency
gender stability second milestone in gender schema theory in which children understand that boys grow up to be men and girls grow up to be women
impulse control ability to consider long-term goals rather than short-term pleasures
initiative versus guilt third stage of Erikson's psychosocial development theory in which children learn to reach out and approach others and take responsibility in novel situations, or to fail to take responsibility and avoid social interactions
media diet range, type, and amount of information people consume through mass media outlets
metacognition ability to think about your own thinking, or to contemplate your memories, emotions, or motivations
neurodiversity any psychological, emotional, cognitive, or sensory experience that is different from the majority
parenting style way in which a caregiver provides structure, feedback, and emotional support for a child
permissive parenting generous and warm parenting style that focuses on keeping a child content and joyful but does not provide a lot of structure or rules
personality stable and enduring construct that describes our unique behavioral, emotional, and cognitive ways of being across contexts
prosocial behavior socially competent behaviors such as sharing, helping, and cooperating
proximity circumstances that include children living, attending school or extracurricular activities close together
self-concept ideas we have about ourselves, and the words, pictures, and feelings we use to describe ourselves
self-esteem evaluation of our self, determined either through social acceptance or social comparisons
self-regulation ability to calm and de-escalate our heightened emotions and to express situationally appropriate emotions
similarity shared characteristics or interests such as matching hobbies, interests, appearances, or emotional temperaments
social comparisons evaluations of self and others in order to rank-order or judge
structured play play in which children follow an adult-led activity or game
uninvolved parenting distant parenting style in which children are given little structure, attention, or warmth

Summary

6.1 Social and Emotional Development in Early Childhood

- Early childhood is a time to explore taking the initiative in social interactions and taking on responsibility in new challenges. Children who learn to reach out and initiate social contact tend to be more confident, whereas children who hesitate to take responsibility and/or become anxious making connections tend to feel more guilt.
- This is also a time of concrete self-concept development. Children tend to start to understand the self in terms of basic descriptions such as name, age, appearance, and interests. Self-esteem emerges in early childhood and is influenced mainly by parental approval and social comparisons.
- Self-regulation matures in early childhood and includes impulse control and inhibition. Self-conscious emotions mature through the development of metacognition.
- The social world in young childhood expands to include preschool and daycare environments.
- Children who are neurodiverse may experience early social and emotional development differently. In one example of neurodivergence, autistic children may struggle with socializing with others.

6.2 Identity in Context: Gender Development and Racial Identity in Early Childhood

- Gender is different from biological sex and refers to the psychological, social, and identity components of being a girl or a boy.
- According to gender schema theory, children understand their gender identity, its stability, and its constancy by early childhood.
- According to ethnic-racial identity theory, children begin to understand their ethnic and racial identity in early childhood, but this understanding is more apparent in racialized children.
- Parents and families influence young children's understanding of gender and race by modeling behaviors, teaching about heritage, and sharing expectations and biases.
- Children's media affect children's understanding of gender and race. Representation matters, and more progressive and nuanced portrayals of gender diverse and racialized characters are needed.

6.3 Families as Context in Early Childhood

- Parenting styles vary in the amount of warmth, structure, and support for autonomy they provide. Parenting styles vary by culture.
- Parents shape children's behavior positively or negatively through using reinforcement or punishment.
- Reinforcement that is immediate, consistent, and rewarding works best. Punishment works best when it is logical, delivered in a calm but firm way, and delivered by a person with a positive relationship with the child.
- Corporal punishment, or physical punishment, increases risks of a variety of negative child outcomes, including defiance, anxiety, aggression, and poor family relationships.
- Child abuse can include physical, sexual, or emotional abuse or neglect, and is a prevalent health risk for children.
- Siblings help to provide companionship and opportunities for cognitive, social, and emotional development.
- Divorce can be a traumatic experience for children, but outcomes can be improved when parents prioritize their child's well-being and involve extended family members and others to help.

6.4 Social Contexts: Peers, Play, and Friendship in Early Childhood

- Peers are same-age acquaintances, and friends are peers with whom children form a mutual liking and emotional attachment. Friendship quality matures over time and benefits development in many ways.
- Play is valuable for development and helps to foster many skills. Some children prefer to play in dyads or groups, whereas others prefer solitary play.
- Aggression has many subtypes and is linked with family dynamics, environment, genes, epigenetics, and

peer relations.
- Prosocial skills such as cooperation, empathy, and altruism are beneficial and linked with social competence.

6.5 Media Exposure and Literacy in Early Childhood

- Children consume a great deal of media content in many diversified forms.
- Some media consumption is detrimental to child development, especially if used as a babysitter and to replace face-to-face interaction.
- Some media consumption can be beneficial in helping with cognitive development, social development, and creativity.
- Messages in the media can influence the way children think and perceive their world.

Review Questions

1. What is a possible early sign of autism spectrum disorder?
   a. making impulsive decisions
   b. struggling with a repetitive behavior or fixation
   c. using reverse pronouns (“you” instead of “me”)
   d. having difficulty hearing sounds of language

2. What self-regulation technique would be expected from a typical five-year-old?
   a. crawling on the floor and distracting themselves with toys
   b. demanding to be held for several minutes
   c. breathing deeply and closing their eyes
   d. calmly discussing their opinion

3. What term is used to describe thinking about your thoughts, emotions, opinions, or memories?
   a. accommodation
   b. equilibration
   c. delay of gratification
   d. metacognition

4. The stage of ethnic-racial identity development in which children are able to describe their own ethnicity is called ethnic
   a. knowledge
   b. constancy
   c. stability
   d. labeling

5. The concept of gender constancy refers to the ability to
   a. know and label your own gender identity
   b. understand biases and gender stereotypes
   c. know that gender does not shift rapidly
   d. understand that one's gender identity can change but personal qualities do not

6. Mothers are more likely than fathers to interact with their children in what way?
   a. encourage daughters to disregard lessons learned from schoolteachers
   b. interact with children based on their personalities
   c. encourage sons to be assertive and brave
   d. engage in physical or "rough-and-tumble" play

7. A parent who tries to listen to what their children have to say, explains why their misbehaviors were a problem, and focuses on strengthening relationships skills is using what type of parenting style?
   a. authoritative
   b. authoritarian
   c. permissive
   d. uninvolved

8. Children whose parents divorce are more likely to have negative outcomes in which situation?
   a. The separation happens when they are infants.
   b. Both parents remain active in their lives.
   c. Children are asked to relay messages between parents.
   d. The parents continue to demonstrate a friendship.

9. What is often an advantage of being an only child?
   a. increased opportunities for companionship
   b. growth in perspective taking and empathy
   c. growth in mentoring and leadership skills
   d. increased one-on-one time with parents

10. What term describes a child who is assertive, helpful, altruistic, and cooperative?
   a. conscientious
   b. assimilated
   c. prosocial
   d. ambivalent

11. A child prefers to play with one peer at a time instead of a group of other children. What is this type of play called?
   a. free play
   b. solitary-engaged play
   c. dyadic play
   d. structured play

12. How are children with low approach motivation and low avoidance motivation likely to be categorized?
   a. avoidant
   b. shy
   c. social
   d. introverted

13. One recommendation made to parents about their children's consumption of media is that the parent should
   a. allow children to watch television in privacy.
   b. allow children to watch television for up to three hours per day.
   c. discourage video chatting with extended family.
   d. offer guidance on what children are viewing.

14. According to experts, preschooler children should consume how much screen time per day?
   a. none
   b. less than fifteen minutes
   c. around an hour or less
   d. less than two hours

15. What type of media do young children most commonly consume?
   a. social media posts
   b. streaming videos
   c. video games
   d. streaming music

Check Your Understanding Questions

16. Describe Erikson's third stage of psychosocial development. What is meant by initiative? What is meant by guilt?

17. How is the social world around preschoolers changing in early childhood? What is new and different from infancy and toddlerhood?

18. What are some of the ways children learn about gender stereotypes in early childhood?

19. What happens in the stage of ethnic knowledge? What types of knowledge are taught, obtained, and understood?

20. What are some of the ways punishment can be made more effective when a parent needs to discourage a behavior in a child?

21. What makes research on siblings so complicated?

22. How are peers different from friends?

23. Describe three different motivations for aggression.

24. What is a media diet made up of?

25. How does desensitization work? What causes it to happen?

Personal Application Questions

26. Reflect on a time in your early childhood when you wanted to take initiative in a new activity or social situation. How did the adults around you respond? Did their response encourage or discourage your sense of initiative? How does your experience relate to Erikson's stage, initiative versus guilt? How do you think this experience has influenced your willingness to take initiative in new situations today?

27. Consider your ability to regulate your emotions as a child. Were there specific strategies or techniques that you used to calm down or manage your feelings? How do these early experiences with emotional regulation compare to the strategies you use today? Reflect on how early experiences with emotional regulation have shaped your current emotional intelligence.

28. Consider your early understanding of gender roles and identity. How did your family, school, media, and toy/play preferences shape your views on gender during early childhood? Reflect on how these early experiences may have influenced your current views on gender.

29. Think about a time during your early childhood when you first became aware of racial or ethnic differences. How did your environment (e.g., family, community, media) influence your understanding of race? Reflect on how these early experiences have shaped your current perspectives on racial identity and diversity.

30. Reflect on your own childhood experiences with your caregivers. How would you describe their parenting styles? Did they use a more authoritative, authoritarian, permissive, or neglectful approach? How do you think that parenting style influenced your development and your relationships with others?

31. Consider the rewards and punishments used in your family or by your caregivers when you were growing up. Were you more motivated by praise and rewards or by avoiding punishment? Reflect on how these

experiences shaped your behavior, self-discipline, and attitudes toward rules and authority.

32. Think about the influence of siblings in your early childhood, if applicable. How did having siblings (or not having siblings) impact your social and emotional development? Reflect on whether sibling rivalry, cooperation, or role modeling played a role in shaping your personality and relationships.

33. Reflect on your early childhood experiences with friendships. What qualities did you value most in a friend at that age, and how did those friendships impact your sense of belonging and identity? Consider how your early experiences with peers shaped your current approach to building and maintaining relationships.

34. Recall a time when you were either excluded from or included in a group during early childhood. How did this experience make you feel, and how did it affect your understanding of friendship and social belonging? Reflect on how such early experiences might influence your social behavior and preferences today.

35. Can you remember a time when you experienced aggression as a child? Reflect on the type of aggression. Describe the aggression in terms of dimensions based in the text. For instance, was the aggression instrumental or hostile? Were you the instigator or the reactor? Were there consequences for this behavior, and did they come from parents, teachers, peers, or something else? How did you respond to these consequences, and did they influence your behavior moving forward?

36. How has the presence of technology and media impacted the way children develop socially and emotionally? Reflect on your experiences or observations. How do you think limited or increased screen time could influence a child's ability to connect with others face-to-face?

37. Consider a favorite TV show or digital content from your childhood. What values or behaviors did it promote? Reflect on how such content might have influenced your social interactions, attitudes, or understanding of the world.

38. Think about a young child you know. How do their media habits (e.g., watching YouTube, playing video games, etc.) compare with the way you interacted with media at their age? How do you believe this shift in media exposure could impact their long-term development?

Essay Questions

39. Examine the influence of early social environments on a child's social development. How do interactions with family members, peers, and caregivers contribute to the development of social skills and relationships? Additionally, discuss how preschool or daycare staff can apply this information in practical ways to support children's social development. Use examples from the text to support your discussion.

40. Imagine you are designing a program for preschool-aged children that aims to promote positive peer relationships and social skills. How would you incorporate activities that build prosocial values, including respect for gender and racial diversity? Discuss specific strategies or activities that could be used to foster an inclusive environment where children learn to appreciate differences and develop empathy.

41. Sabrina is a 4-year-old preschooler whose caregivers are struggling with managing her behavior. Sabrina often throws tantrums when she doesn't get her way, refuses to share her toys with others, and frequently ignores instructions. Her caregivers feel frustrated and are unsure of how to effectively reinforce positive behaviors and address her undesirable actions. Using techniques from the text, such as time-out, corporal punishment, and positive reinforcement, recommend a behavior management plan that will help Sabrina's caregivers guide her toward more appropriate behaviors. Discuss the potential benefits and drawbacks of each technique and explain which strategies would be most effective based on Sabrina's needs.

42. Imagine you are a family counselor meeting with a married couple who are seeking a divorce. They have

three children: a one-year-old, a four-year-old, and an eight-year-old. The parents are concerned about how the divorce will affect their children and want to know the best ways to support them during this difficult time. As the counselor, provide recommendations on how to minimize the emotional impact on each child, considering factors such as the child's age, the level of parental conflict, and the quality of post-divorce parenting. Use examples from the text to support your advice.

43. In today's world, many children are growing up in a phone/tablet-based rather than a play-based environment. Discuss the role of play in early childhood social development and argue why play remains essential despite the increasing prevalence of screen time. How do different types of play (e.g., cooperative, associative, parallel) contribute to children's social skills, problem-solving abilities, and understanding of social roles? Use examples from the text to support your argument for the need for all children to experience the benefits of play for healthy development.

44. Evaluate the role of cultural influences in shaping children's social interactions and friendships during early childhood. How do cultural values, practices, and traditions impact the way children engage with peers and form friendships? Use examples from the text to discuss the importance of cultural awareness in early childhood education.

45. Wayne is a seven-year-old boy who spends enormous amounts of time on his tablet watching YouTube videos and playing racing car games. His parents are concerned about the long-term effects of his screen time and have reached out to a pediatrician for guidance. As the pediatrician, provide recommendations on how Wayne's parents can establish a healthier balance between screen time and other activities, such as outdoor play, creative arts, and social interactions. Discuss the developmental benefits of a balanced routine and offer practical strategies for managing screen time effectively. Use examples from the text to support your recommendations.

Physical and Cognitive Development in Middle Childhood (Ages 7 to 12)

7

FIGURE 7.1 Middle childhood is a time of rapid physical and cognitive changes. During this period, children develop physical and cognitive abilities that allow them to succeed in school settings and in other organized activities such as sports, dance, and music. (credit: modification of work "Indie's First Bus Ride, Kindergarten" by Rob Briscoe/ Flickr, CC BY 2.0)

CHAPTER OUTLINE

7.1 Physical Development and Health in Middle Childhood
7.2 Cognition in Middle Childhood
7.3 Intelligence in Middle Childhood
7.4 Contexts: School and Learning Diversity in Middle Childhood
7.5 Language in Middle Childhood

WHAT DOES PSYCHOLOGY SAY? It is the first day of a new school year, and Cynthia is helping her two children prepare for the day. Her son Matt is starting fifth grade, while her daughter Sari is entering first grade. Cynthia has already dropped off the supplies the kids will need at school. Matt's supplies included notebooks, pencils, scissors, and colored pencils. Sari's items were crayons, markers, scissors, pencils, and a mat for rest time.

Sari is nervous but also excited. She needs help packing and zipping her backpack, which Cynthia does while preparing her breakfast and packing her lunch and a snack. While she eats her breakfast, Sari talks about being excited and not sitting in the kindergarten section of the bus this year. She also asks whether she will need to write both her first and last name. Matt has just finished dressing himself, although his clothes do not match. Cynthia is encouraging independence, so she simply praises him for getting ready. She supervised as he packed his own lunch, but encouraged him to choose between a few healthy options, and they've agreed he

will have school lunches twice a week. She talks to Matt about his school schedule, which includes daily time for reading and math but not for recess. Matt worries that he will not be able to sit all day. He also worries about how much homework he will have and whether he will have time to play with friends. At the same time, he is excited to be in the oldest grade in the school and assures Sari that he will be able to show her around and introduce her to all the teachers.

As Cynthia watches Matt and Sari board the school bus, she finds herself wondering:

- Will Sari have the fine motor skills she needs to be able to tie her shoes and write her name?
- How much sleep will Sari and Matt need to be successful learners?
- Would it be better for fifth-graders to still have a daily recess time?
- Will the school lunches provide the nutrition that Sari and Matt need?

This chapter discusses what to expect for both physical and cognitive development in children who are in middle childhood.

7.1 Physical Development and Health in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify growth trends and milestones in middle childhood
- Describe advances in gross and fine motor development in middle childhood
- Describe nutritional, sleep, and other health needs in middle childhood

Arif is outside with his friends after school. They are playing baseball, but because there are only six of them today, they are coming up with creative ways to make the game work. Arif is having a great time because he knows that he has really improved over the last few months in hitting and catching. He has been practicing with his uncle regularly and feels much more relaxed and capable. A year ago, he would have gone straight home and skipped the neighborhood game, but he is now taller, stronger, and more confident in his skills.

As children move into middle childhood they still look like little kids, but by the end of middle childhood, many have had a growth spurt and begin to look like adolescents. In addition to changes in physical growth, children are experiencing changes in gross motor skills and are becoming more coordinated (Lima et al., 2017). These changes allow them to be more capable when engaged in physical activities such as climbing a tree, playing tag, or having a neighborhood game of baseball. Similarly, the continuing development of fine motor skills is important for improving skills such as writing. Changes in nutritional and sleep needs and health issues are other important aspects of physical development during middle childhood.

Physical Growth and Development

Although there are a lot of individual differences during middle childhood, physical growth continues to happen in some predictable ways. As children move into middle childhood, they have often lost the rounded bellies and full faces associated with early childhood, and have a leaner appearance. There are not many sex differences at this point. Boys and girls are similar in size and body shape, although girls are often slightly smaller than boys (Lazzara, 2020). Children now grow steadily, if more slowly than earlier in life, adding approximately 2 to 3 inches in height and adding about 5 to 7 pounds per year in weight until they reach puberty (Lazzara, 2020). Around age seven, children average 44 inches tall and 50 pounds, but by age eleven, girls average 52 inches tall and 82 pounds, and boys average 52 inches tall and 77 pounds. Towards the end of middle childhood, as girls enter puberty, which typically occurs a few years earlier than for boys, they tend to be larger than boys of the same age. However, once boys begin puberty, the height and weight gap generally disappears, and in most cases, boys will grow taller and weigh more than girls (Lazzara, 2020). Hereditary differences in things like potential height and the growth spurts that can occur during middle childhood, however, lead to wide variability in size.

Several factors may influence how quickly children grow, including genetics and environmental factors. Genes

determine about 80 percent of adult height, while the other 20 percent is influenced by environmental factors (Perkins et al., 2016). A lack of protein in the diet and childhood disease are particularly important environmental influences on height (Bozzoli et al., 2009; Koletzko et al., 2014). Nutritional deficits can lead to stunted growth, which often persists and can get worse if malnourishment continues (Kitsao-Wekulo et al., 2013). Furthermore, stunted growth in school-aged children is often associated with other concerns, including behavior problems and cognitive deficits (Hoddinott et al., 2013). Other environmental factors include prenatal development resources (such as maternal nutrition), severe neglect (Nelson et al., 2019), and even the family's socioeconomic status (SES) or the wealth of the country or region they live in (Fox & Heaton, 2012; Mumm et al., 2016). For example, children in wealthier countries, living in more urban areas, or from families with better economic and educational resources often are physically healthier and have better nutrition outcomes (Fox & Heaton, 2012; Mumm et al., 2016; Schell et al., 2009).

Toward the end of middle childhood, some children may have a growth spurt as they begin the process of puberty, the stage in which they sexually mature as they prepare to enter adolescence. Around ages six to eight, the groundwork for puberty is being set by greater production of hormones from the adrenal glands (Mendle et al., 2019). These hormones prepare the body for physical maturation. However, the onset of true puberty, including changes in physical characteristics like voice changes and increased body hair, does not occur until later, between eight and thirteen years of age for girls and between nine and fourteen years of age for boys (Farello et al., 2020). Puberty typically lasts between 2.5 and 4 years (Cheng et al., 2019). A variety of hereditary and environmental factors can influence the timing of puberty. (You will learn more about this in 9.1 Physical Growth and Development in Adolescence.)

Along with the body, the brain experiences a growth spurt early in middle childhood and reaches 95 percent of its adult size between seven and eight years of age (Thompson et al., 2020). Although there is very little change in the number of neurons from infancy to adulthood, the brain develops in very important ways during childhood. During this stage of development, new synaptic connections continue to form between areas of the brain that are responsible for sensory and motor skills, and myelination increases (Buyanova & Arsalidou, 2021). The continued development of myelin across early and middle childhood partially explains why children show increased efficiency in reaction times and information processing abilities (Chevalier et al., 2015; Scantlebury et al., 2013). As a result, children will be able to perform tasks that require faster reaction times such as catching a ball, playing a musical instrument, or finally winning family game night.

During childhood, the neural connections in the brain are being fine-tuned. Synapses that are regularly used are strengthened, while other synapses are pruned. Synaptic pruning is the elimination of unneeded synapses in the brain, which allows for more efficient functioning. The location of the most significant changes in brain development is the prefrontal cortex, the most forward portion of the frontal lobe (Kolk & Rakic, 2022). This area is responsible for tasks such as logic, planning, memory, and attention. As you have learned, various environmental experiences play a role in shaping brain development.

The human brain consists of left and right hemispheres, joined by a bundle of nerve fibers called the corpus callosum, which continues to mature during middle childhood. During childhood, children are increasingly able to coordinate functioning across the two hemispheres of their brain, a process called lateralization. This process is important for the development of skills that are lateralized, such as language. As the brains of children develop, their left hemisphere, which is responsible for language production and comprehension, and their right hemisphere, which is responsible for intonation and understanding emotional nuances in language, begin to work together more effectively. This integration can be observed when children start to use more advanced language structures, such as longer sentences and more sophisticated vocabulary. Moreover, children become more capable of expressing and comprehending nuanced emotions through language, indicating a greater coordination between linguistic and emotional processing across both hemispheres.

Gross and Fine Motor Skills

Children continue to make significant gains in both their gross and fine motor skills during middle childhood.

Recall that gross motor skills use the larger muscles and consist of large bodily movements. The skills that develop during this time include balance, running, jumping, climbing, throwing, and catching (Table 7.1). Children are becoming faster, more coordinated, and stronger. Advancements in these skills allow them to get involved in organized sports, ride bikes, skate, or study dance or martial arts (Figure 7.2).

(a) (b)

FIGURE 7.2 As children's brains and bodies grow, they can better coordinate their movements and delight in exploring their world through improved motor skills and reaction time. Grasping something with one's hands requires fine motor skills, while larger body movements are gross motor skills. Both are required for activities like (a) swinging across a set of playground rings or (b) jumping rope. (credit a: modification of work "Monkey bar twins" by Donnie Ray Jones/Flickr, CC BY 2.0; credit b: modification of work "More Jedi obstacle course" by Library and Information Services Metropolitan State University/Flickr, Public Domain)

Fine motor skills use the smaller muscles and consist of smaller-scale bodily movements such as those that rely on the fingers and hands. Fine motor skills are important for many daily living activities including feeding and dressing (Van der Linde et al., 2015), as well as for many activities used for learning in school settings. During middle childhood, children continue to refine fine motor skills such as writing, cutting, drawing, painting, tying shoelaces, and buttoning (Table 7.1). They can use all eating utensils and are able to gradually draw more detailed shapes or pictures. Handwriting improves dramatically as children become more proficient at writing smaller and neater letters. Fine motor skills also allow children to learn to play a musical instrument such as the piano or guitar. The development of fine motor skills is also important for other aspects of development. For example, children who have well-developed fine motor skills have more advanced mathematical and reading achievement (Cameron et al., 2012).

Typical Age of Appearance in Years	Common Gross Motor Milestones	Common Fine Motor Milestones
6–7	Skipping Balancing on one foot with eyes closed	Cutting with scissors
8–9	Jumping vertically 8–10 inches	Producing neater handwriting Writing smaller letters of uniform size
10–12	Jumping 3 feet (high jump)	Drawing detailed and complex images and shapes

TABLE 7.1 Common Gross and Fine Motor Skills Milestones

The development of fine motor skills is impacted by the experiences that children have (Figure 7.3). For example, some studies have shown increased fine motor dexterity among children who play video games (Adams et al., 2012). Culture is also an important factor that influences the development of motor skills. For example, children from Hong Kong, who often have early exposure to and practice with writing utensils and chopsticks, have more advanced fine motor skills than children from the United States (Chui et al., 2007). Differences by culture or gender are often due to differences in childrearing practices and in the timing and amount of exposure to certain skills that children receive.

(a) (b) (c)

FIGURE 7.3 Fine motor skills such as (a) writing, (b) tying one's shoes, and (c) playing an instrument continue to develop throughout middle childhood. (credit a: modification of work "Child Writing" by Alyssa Sieb/nappy, Public Domain; credit b: modification of work "Tie Your Shoes, We're Going Home" by William Klos/Flickr, CC BY 2.0; credit c: modification of work "Southern California Division - Jr. Music Camp 2012" by John Docter, Salvation Army USA West/Flickr, CC BY 2.0)

Health Needs in Middle Childhood

Children also have important health needs during middle childhood that are required to support their ability to develop in other areas, including cognition and socioemotional development. Sufficient sleep, adequate nutrition, and regular exercise are all important. Additionally, regular health and dental care, and attention to accident prevention and other health issues help to promote healthy development during this period.

Sleep

Sleep patterns play an important role in development during childhood. According to the American Academy of Sleep Medicine, children from six to twelve years of age should get nine to twelve hours of sleep every night (Paruthi et al., 2016) (Figure 7.4). One reason is that during sleep, the brain consolidates the information the child was exposed to during the day (Paller et al., 2021). In addition, it is during sleep that the release of human

growth hormone occurs (Zaffanello et al., 2024). Human growth hormone is responsible for physical growth and muscle development. Lack of sleep can also affect children's ability to focus, and is associated with crankiness, behavior problems, and difficulties in school (Liu et al., 2024).

FIGURE 7.4 Although children may no longer need a nap and will generally sleep less than they did during early childhood, quality sleep is still critical for physical, cognitive and socioemotional development. (credit: "Photo by thewaxaddict on Instagram: "#latergram #rw24 nap-time thanks to @julesbayview for the photo credit" by "kisluvkis"/Flickr, Public Domain)

Occasional disruptions in sleep are normal and may be the result of stressful situations at school or at home. Fortunately, such temporary sleep problems usually resolve on their own and do not create any long-term issues. However, if problems with sleep become more persistent, children have an increased risk of both emotional and behavioral difficulties, as well as ongoing problems with school performance (Williamson et al., 2020). Therefore, if a child is experiencing ongoing sleep problems that get worse over time, like night terrors, a physician should be consulted.

Healthy sleep habits and routines continue to be beneficial throughout childhood. For example, quiet reading time and avoiding electronics before bed helps encourage adequate, good quality sleep.

Nutrition

A healthful diet during middle childhood is important for physical, cognitive, and socioemotional development. Children need between 1,800 to 2,200 calories a day (Faizan & Rouster, 2023), which should be comprised of a range of minimally processed foods, including a variety of fruits and vegetables, whole grains, and protein, as well as small amounts of healthful oils, to grow and develop well (U.S. Department of Health and Human Services, 2015). However, processed foods with too much sugar, fat, and sodium are common, because they are less expensive, more accessible, and easier to prepare (Figure 7.5). As a result, many children have a diet full of sugary products, high-fat fast foods, and high levels of sodium, with both short- and long-term consequences. In the short term, poor nutrition is related to excess weight gain and constipation. Over the long term, possible consequences include obesity and the risk of cardiovascular disease, diabetes, hypertension, and other health and emotional problems (Saavedra & Prentice, 2023).

FIGURE 7.5 Although there have been significant improvements in healthful choices available to children for school lunches, less healthful options continue to be available. These include highly-processed foods like pre-made sandwiches or chocolate milk. (credit: modification of "Supporting the Healthy Growth of Our Children During National School Lunch Week" by Tim Lauer, principal of Meriwether Lewis Elementary School in Portland, Oregon/ USDA.gov, Public Domain)

Obesity is a serious health concern. Nearly 19 percent of U.S. school-aged children have obesity, a percentage that has nearly doubled over the last several decades (Hales et al., 2018). Another 16 percent of children are overweight according to the Centers for Disease Control and Prevention (Stierman et al., 2021), as measured by body mass index (BMI). Children with a BMI in the ninety-fifth percentile or higher are considered obese. Children with a BMI between the eighty-fifth and ninety-fifth percentile for age are classified as being overweight. Obesity in children is associated with numerous health concerns, including high blood pressure and reductions in insulin, which has implications for depression and diabetes, as well as for other difficulties such as in mental health and academic achievement (Sahoo et al., 2015). Excess weight has also been shown to impair brain functioning, which in turn can harm memory and decision-making abilities (Liang et al., 2014).

Another possible consequence of poor nutrition is undernutrition, which occurs when children are not capable of absorbing adequate nutrients from their diet due to digestive medical issues or because they do not receive adequate nutrients. Wasting and stunting are two extreme forms of undernutrition that, while often a concern primarily in early childhood, may continue to occur during middle childhood, particularly in cases involving food insecurity, poverty, or chronic illness. Wasting is the tendency for children to be too thin for their height, while stunting occurs when they are too short for their age. These two forms of malnutrition are closely related and are often found in the same population of children (Thurstans et al., 2022). Undernutrition can increase risks of illness, poorer cognitive functioning, and poor mental and behavioral health (Kirolos et al., 2022).

Given that poor nutrition during childhood is linked to so many poor developmental outcomes, nutritional interventions that increase the overall quality of nutrition for children have been shown to increase academic performance and cognitive development (O'Brien et al., 2021). These interventions include programs to provide higher quality school lunches, as well as social programs to provide access to high quality food for lower income families. Children have a high likelihood of being resilient from early nutrition risks when prevention and intervention programs are made available in early and middle childhood (Suryawan et al., 2022). There are social programs that educate parents, provide free lunches, and provide access to affordable, healthful food.

Exercise

Physical activity and engagement in sports during middle childhood have a positive impact on the motor, cardiovascular, hormonal, respiratory, immunologic, and nervous systems of school-aged children, and are associated with better cognitive and emotional development (Bidzan-Bluma & Lipowski, 2018). As a result, the CDC recommends that school-aged children get at least one hour of moderate to vigorous physical activity per day. This physical activity can occur in school during physical education classes or recess, during unstructured play outside of school, or through involvement in organized sports teams.

Despite the benefits, children are more sedentary now than they have been in past decades, and only about a third regularly engage in physical activity (Graf, 2016). This inactivity is a global issue. According to the World Health Organization, 85 percent of children across the world are considered inactive, although rates do vary slightly by country (Guthold et al., 2020). For example, one study reported that only 26.2 percent of children in Thailand met the guidelines for adequate physical activity (Katewongsa et al., 2021), while 33 percent of children in Canada (Barnes et al., 2018), and 60 percent of children in Shanghai, China (Xiang et al., 2020) met the guidelines for physical activity before the COVID-19 pandemic. However, the rates dropped to approximately 18 percent for both countries during the pandemic.

Recent research has highlighted barriers that make it difficult for children to get the recommended amount of daily exercise. For example, children who live in areas with high levels of poverty are less likely to have access to high-quality recreational facilities and safe places to play (Kim & Cubbin, 2020). This can result in decreased physical activity levels among children. In some countries in the Middle East and northern Africa, barriers to physical activity include the absence of social support from parents and friends, lack of appropriate facilities, and hot climate (Chaabane et al., 2021).[1] In many countries around the world, girls also have additional barriers to participating in physical activity related to cultural roles for females that includes greater encouragement for boys to engage in sporting activities (Kretschmer et al., 2023). Promoting physical activity and health for the entire family through school-based interventions shows promising evidence of reducing sedentary behavior and improving healthy behaviors (Santos et al., 2023).

LINK TO LEARNING

Designed for parents with children ages 6–12, this video about physical activity for children (https://openstax.org/r/104PhysActivity) discusses the importance of regular physical activity, how much physical activity children need, and how to get children moving.

Accident Prevention

As discussed in 5.1 Physical Health and Growth in Early Childhood, unintentional injuries are a leading cause of both death and disabilities among children (West et al., 2021). This continues to be true in middle childhood. The leading causes of nonfatal child injuries in the United States are automobile accidents, drowning, poisoning, fires, and suffocation. Globally, road traffic injuries, drownings, fire, and poisoning are the most common causes of unintentional injuries among children (Chandran et al., 2010).

Injuries in children are often preventable. In fact, prevention strategies have successfully reduced injury-related deaths in higher-income countries such as the United States (CDC, 2019). Some of the more effective prevention strategies include the required use of seat belts, laws regarding distracted driving, the use of bicycle helmets, and the use of crossing guards near schools to reduce deaths and injuries related to automobile accidents. To reduce drownings, caregivers are encouraged to give children swimming lessons, to use life jackets, and to closely supervise children near water. The use of safety caps on medicine bottles and the practice of keeping medications out of the sight and reach of children are helpful strategies for reducing accidental poisonings and overdoses. Although these prevention strategies have been effective in higher-income countries, unintentional injuries continue to disproportionately harm children in low- and middle-

1 This study (Chaabane et al., 2021) uses the term "Middle East and North African (MENA) region."

income countries (Tupetz et al., 2020).

Although unintentional injuries have been decreasing in recent years, firearm deaths have been steadily increasing; a 40.5 percent increase occurred from 2018 to 2021 (Goldstick et al., 2022). In 2020, the leading cause of death among children in the United States was due to firearms (Goldstick et al., 2022), passing motor vehicle accidents for the first time.

Fortunately, most unintentional injuries and deaths are preventable, and in fact, ongoing and systematic prevention efforts that focus on modifying behaviors and environmental factors can effectively reduce the rates of unintentional injuries (Jullien, 2021). However, interventions need to attend to changing policies and trends in health risks. For example, the state of Georgia saw an increase in pediatric firearm injuries following state law changes that reduced restrictions on carrying firearms and during the COVID-19 pandemic indicating a greater need for effective prevention strategies, such as providing greater education on violence prevention and safe storage of firearms (Mulugeta et al., 2024; Lee et al., 2022).

Health and Dental Care

Most children between the ages of six and eleven in the United States are reported to be in either excellent or very good physical health (Parasuraman et al., 2020). Middle childhood is also the ideal time for children to develop healthy habits that can persist into adulthood as they begin to develop independence in self-care. As a result, it is important for children to continue to receive regular health care. In fact, primary health care is both effective and cost-effective for enhancing both physical and mental health (Kraef et al., 2020). Unfortunately, almost 4.5 million U.S. children do not have health insurance; they are less likely to receive needed health care and, as a result, may have poorer overall health (AAP, 2020). While global mortality rates among children over the age of five have dropped by more than 50 percent (UNICEF, 2019), children across the world continue to have unmet health needs due to limited access to health care (Cheng & Shilkofski, 2019).

Dental care is also very important in this stage of life. Beginning around age six, children begin to lose their deciduous teeth, often referred to as baby teeth (Figure 7.6). The first tooth lost is usually in the center of the mouth, which is why you may be able to picture six- or seven-year-old children with a gap in their smile. While they are losing their deciduous teeth, a process that continues until about age twelve, children are simultaneously gaining permanent teeth.

FIGURE 7.6 Losing baby teeth is a normal process during early childhood. Children usually lose their front teeth around the age of six, although it can happen as early as age four or as late as age eight. (credit: modification of work "tooth fairy fodder" by Thomas Kriese/Flickr, CC BY 2.0)

Severe tooth decay can harm a child's development, including socioemotional development (Ramos-Jorge et al., 2014) and increased school absenteeism (Krisdapong et al., 2013). For example, studies with children in several low- to middle-income countries such as Thailand have found that tooth decay has a negative impact on children's social interactions as well as their self-esteem. Children in middle childhood are at risk of developing tooth decay and cavities due to factors such as poor oral hygiene, sugary diets, and irregular dental

visits. Good oral care, including regular visits to the dentist and daily brushing and flossing, is important to maintain healthy teeth and to avoid tooth decay.

Other Health Issues

Although middle childhood is generally a healthy period for many children, there are some common health issues that are often seen during middle childhood, such as asthma and diabetes.

Asthma is a life-long, chronic lung disease that causes inflammation in the airways, making it difficult to breathe. Asthma is a serious public health problem globally (WHO, 2024). It affects about 8 percent of children in the United States (Federal Interagency Forum on Child and Family Statistics, 2017). Although there is no known single cause of asthma, a child is more likely to have asthma if other family members have asthma, if they have other allergic conditions, if they live in urban areas or areas with high air pollution, and if they have obesity (WHO, 2024). Avoiding common triggers of asthma, including air pollution and allergies, can reduce the symptoms of asthma such as shortness of breath and tightness in the chest (McCarthy, 2022). Although it can typically be medically managed, uncontrolled asthma is one of the leading causes of school absences among children and can also interfere with sleep and physical activity (Qin et al., 2022).

Diabetes, a metabolic disorder, is another chronic health issue that can have significant effects on child development. Until recently, most cases in children were type 1 diabetes, a disease in which the immune system attacks healthy tissue and results in the body not producing enough insulin to get glucose or sugar into the cells. However, type 2 diabetes, which used to be considered "adult-onset diabetes," is increasing among children and is often preventable. Risk factors for type 2 diabetes include excess weight, inactivity, and having a family history which leads to increase insulin resistance (CDC, 2022). Although both types of diabetes can be managed, diabetes and other chronic illnesses in childhood have been linked to increased behavior problems and socioemotional concerns in children (Lupini et al., 2023). Many of the behavioral and socioemotional risks for children with chronic illnesses such as diabetes may be prevented through careful monitoring and treatment of symptoms.

Many of the health issues that children may face in middle childhood are experienced at a higher rate for children from a lower SES and for children from historically marginalized races or ethnicities. For example, childhood obesity, diabetes, and poor nutrition are more common risks for those in lower income countries and minority racial/ethnic groups in wealthier countries (Alkhatib & Obita, 2024). Often these trends are related to complex socioeconomic risk factors that may occur at a higher rate, particularly in families, neighborhoods, and regions facing socioeconomic inequality. For instance, families with a lower SES often have less access to more healthful foods, such as fresh produce and easier access to less healthy fast-food (Chatham & Mixer, 2019). In addition, healthier foods, such as fresh fruit and vegetables often cost more than less healthy food options (Chatham & Mixer, 2019). Further, income and education have been found to be associated with quality of diet and levels of physical activity, both of which are closely associated with being overweight or obese (Reis et al. 2020). Prevention and intervention efforts that focus on promoting a healthy lifestyle in combination with programs that support those most at risk of poor nutrition are effective strategies to promote public health (Obita & Alkhatib, 2023).

There are also socioeconomic disparities in risks of accidents, injuries, and asthma. For example, in the United States firearm injuries and deaths are a higher risk in states with higher poverty and disproportionately impact Black children (Roberts et al., 2023). As mentioned earlier, prevention strategies and community policies show promise in reducing these risks. Finally, risks of childhood asthma affects some racial and ethnic populations more than others with non-Latinx Black children having the higher rates (10.6 percent) followed by non-Latinx White (7.7 percent), Asians (3.8 percent) and Latinx children (6.6 percent). These disparities are likely influenced by SES, environmental exposures to pollutants, exposure to long-term stress, and access to quality health care (Grant et al., 2022).[2] Health-care providers can use this information to screen children living in neighborhoods that face higher risks, such as those experiencing greater exposure to air pollution. Local governments and community organizations can also work to improve neighborhood conditions in these areas (Aris et al., 2023).

References

Adams, B.J., Margaron, F., & Kaplan, B. J. (2012). Comparing video games and laparoscopic simulators in the development of laparoscopic skills in surgical residents. *Journal of Surgical Education, 69*(6), 714–717, https://doi.org/10.1016/j.jsurg.2012.06.006

Alkhatib, A. & Obita, G. (2024). Childhood obesity and its comorbidities in high-risk minority populations: Prevalence, prevention, and lifestyle intervention guidelines. *Nutrients, 16*(11), 1730. https://doi.org/10.3390/nu16111730

American Academy of Pediatricians (2020). Access to Care. https://www.aap.org/en/advocacy/health-care-access-coverage/

Aris, I. M., Perng, W., Dabelea, D., Padula, A. M. Alshawabkeh, A., Vélez-–Vega, C. M., Aschner, J. L., Carmargo Jr, C. A., Sussman, T. J., Dunlop, A. L., Elliot, A. J., Ferrara, A., Joseph, C. L. M., Singh, A. M., Breton, C. V., Hartert, T., Cacho, F., Karagas, M. R., Lester, B. M., Kelly, K. R., Ganiban, J. M., Chu, S. H., O'Connor, T. G., Fry, R. C., Norman, G., Trasande, L., Restrepo, B., Gold, D. R., James, P., & Oken, E. & Bastain, T. (2023). Neighborhood opportunity and vulnerability and incident asthma among children. *JAMA pediatrics, 177*(10), 1055-1064. https://doi.org/10.1001/jamapediatrics.2023.3133

Barnes, J. D., Cameron, C., Carson, V., Chaput, J–P., Colley, R. C., Faulknew, G. E. J., Janssen, I., Kramers, R., Saunders, T. J., Spence, J. C., Tucker, P., Vanderloo, L. M., & Tremblay, M. S. et al. (2018). Results from Canada's 2018 report card on physical activity for children and youth. *Journal of Physical Activity and Health 15*, 328–330. https://doi.org/10.1123/jpah.2018-0454

Bidzan-Bluma, I., & Lipowska, M. (2018). Physical activity and cognitive functioning of children: A systematic review. *International Journal of Environmental Research and Public Health*, *15*(4), 800. https://doi.org/10.3390/ijerph15040800

Bozzoli, C., Deaton, A. & Quintana-Domeque, C. (2009). Adult height and childhood disease. *Demography, 46,* 647–669. https://doi.org/10.1353/dem.0.0079

Buyanova, I. S., & Arsalidou, M. (2021). Cerebral white matter myelination and relations to age, gender, and cognition: A selective review. *Frontiers in Human Neuroscience*, *15*, Article 662031. https://doi.org/10.3389/fnhum.2021.662031

Cameron, C. E., Brock, L. L., Murrah, W. M., Bell, L. H., Worzalla, S. L., Grissmer, D., & Morrison, F. J. (2012). Fine motor skills and executive function both contribute to kindergarten achievement. *Child Development*, *83*(4), 1229–1244. https://doi.org/10.1111/j.1467-8624.2012.01768.x

Centers for Disease Control and Prevention. (2019). *Unintentional injury death rates in rural and urban areas: United States, 1999–2017*. U.S. Department of Health and Human Services. https://www.cdc.gov/nchs/products/databriefs/db343.htm

Centers for Disease Control and Prevention. (2022). *Prevalence of overweight, obesity, and severe obesity among children and adolescents aged 2–19 years: United States, 1963–1965 through 2017–2018.* U.S. Department of Health and Human Services. https://www.cdc.gov/nchs/data/hestat/obesity-child-17-18/obesity-child.htm

Chaabane, S., Chaabna, K., Doraiswamy, S., Mamtani, R., & Cheema, S. (2021). Barriers and facilitators associated with physical activity in the Middle East and North Africa region: A systematic overview. *International Journal of Environmental Research and Public Health, 18*(4), 1647. https://doi.org/10.3390/ijerph18041647

Chandran, A., Hyder, A. A., & Peek-Asa, C. (2010). The global burden of unintentional injuries and an agenda for progress. *Epidemiologic reviews*, *32*(1), 110–120. https://doi.org/10.1093/epirev/mxq009

Chatham R. E., Mixer S. J. (2019). Cultural influences on childhood obesity in ethnic minorities: a qualitative systematic review. *Journal of Transcultural Nursing, 31*(1), 87–99. https://doi.org/10.1177/1043659619869428

Cheng, H. L., Harris, S. R., Sritharan, M., Behan, M. J., Medlow, S. D., & Steinbeck, K. S. (2019). The tempo of puberty and its relationship to adolescent health and well-being: A systematic review. *Acta Paediatricia, 109*(5), 900–913. https://doi.org/10.1111/apa.15092

Cheng, T.L., & Shilkofski, N. (2019). Global child health: Beyond surviving to thriving. *Pediatric Research, 86*, 683–684. https://doi.org/10.1038/s41390-019-0574-6

Chevalier, N., Kurth, S., Doucette, M. R., Wiseheart, M., Deoni, S. C., Dean III, D. C., O'Muircheartaigh, J., Blackwell, K. A., Munakata, Y., … & LeBourgeois, M. K. (2015). Myelination is associated with processing speed in early childhood: preliminary insights. *PLOS one, 10*(10), Article e0139897. https://doi.org/10.1371/journal.pone.0139897

Chui, M. M., Ng, A. M., Fong, A. K., Lin, L. S., & Ng, M. W. (2007). Differences in the fine motor performance of children in Hong Kong and the United States on the Bruininks-Oseretsky test of motor proficiency. *Hong Kong Journal of Occupational Therapy*, *17*(1), 1–9. https://doi.org/10.1016/S1569-1861(07)70002-5

Faizan, U. & Rouster, A. (2023). Nutrition and hydration requirements in children and adults. [Updated 2023 Aug 28]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK562207/

Farello, G., Altieri, C., Cutini, M., Pozzobon, G., & Verrotti, A. (2020). Review of the literature on current changes in the timing of pubertal development and the incomplete forms of early puberty. *Frontiers in Pediatrics, 7,* 147. https://doi.org/10.3389/fped.2019.00147

Federal Interagency Forum on Child and Family Statistics (2017). *HEALTH8.B Asthma: Percentage of children ages 0–17 who currently have asthma[a] by age, poverty status, race and Hispanic origin, and area of residence, 2001–2021* https://www.childstats.gov/americaschildren/tables/health8b.asp?popup=true

Fox, K., & Heaton, T. B. (2012). Child nutritional statuzs by rural/urban residence: A cross-national analysis. *The Journal of Rural Health*, *28*(4), 380–391. https://doi.org/10.1111/j.1748-0361.2012.00408.x

Goldstick, J.E., Cunningham, R.M., & Carter, P.M., (2022). Current causes of death in children and adolescents in the United States. *New England Journal of Medicine, 386*, 1955–1956. https://doi.org/10.1056/nejmc2201761

Graf C. (2016). Active at any age—Sports and nutrition in various stages of life: Children. *Aktuel Ernahrungsmed, 41*, 32–34.

Grant, T., Croce, E., & Matsui, E. (2022). Asthma and the social determinants of health. *Annals of Allergy, Asthma & Immunology, 128,* 5–11. https://doi.org/10.1016/j.anai.2021.10.002

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: A pooled analysis of 298 population-based surveys with 1·6 million participants. *The Lancet Child & Adolescent Health, 4*(1), 23–35. https://doi.org/10.1016/S2352-4642(19)30323-2.

Hales, C.M., Fryar, C.D., Carroll, M.D., Freedman, D.S., & Ogden, C.L. (2018). Trends in obesity and severe obesity prevalence in US youth and adults by sex and age, 2007–2008 to 2015–2016. *JAMA*, *319*(16), 1723–1725. https://doi.org/10.1001/jama.2018.3060

Hoddinott, J., Alderman, H., Behrman, J. R., Haddad, L., & Horton, S. (2013). The economic rationale for investing in stunting reduction. *Maternal & child nutrition*, *9 Suppl 2*(Suppl 2), 69–82. https://doi.org/10.1111/mcn.12080

Jullien S. (2021). Prevention of unintentional injuries in children under five years. *BMC pediatrics*, *21*(Suppl 1), 311. https://doi.org/10.1186/s12887-021-02517-2

Katewongsa, P., Pongpradit, K., & Widyastari, D. A. (2021). Physical activity level of Thai children and youth: Evidence from Thailand's 2018 report card on physical activity for children and youth. *Journal of Exercise Science & Fitness*, *19*(2), 71–74. https://doi.org/10.1016/j.jesf.2020.11.002

Kim, Y., & Cubbin, C. (2020). Neighborhood poverty histories and physical activity among children: Findings from the geographic research on wellbeing (GROW) study. *American Journal of Health Promotion: AJHP*, *34*(8), 876–885. https://doi.org/10.1177/0890117120923948

Kirolos, A., Goyheneix, M., Eliasz, M. K., Chisala, M., Lissauer, S., Gladstone, M. & Kerac, M. (2022). Neurodevelopmental, cognitive, behavioural and mental health impairments following childhood malnutrition: A systematic review. *BMJ Global Health*, *7*, Article e009330. https://doi.org/10.1136/bmjgh-2022-009330

Kitsao-Wekulo, P., Holding, P., Taylor, H. G., Abubakar, A., Kvalsvig, J., & Connolly, K. (2013). Nutrition as an important mediator of the impact of background variables

2 This study (Grant et al., (2022) Asthma and the social determinants of health. Annals of Allergy, Asthma & Immunology) uses the terms "Latinx," "Black," "White," and "Asian."

on outcome in middle childhood. *Frontiers in Human Neuroscience*, *7*, 713. https://doi.org/10.3389/fnhum.2013.00713
Koletzko B., Chourdakis M., Grote V., Hellmuth C., Prell C., Rzehak P., Uhl O., & Weber M. (2014). Regulation of early human growth: impact on long-term health. *Annals of Nutrition and Metabolism., 65(2-3)*,101-9. https://doi.org/10.1159/000365873
Kolk, S.M., & Rakic, P. (2022). Development of prefrontal cortex. *Neuropsychopharmacology, 47*, 41–57. https://doi.org/10.1038/s41386-021-01137-9
Kraef, C., Wood, B., von Phillipsborn, P., Singh, S., Peterson, S.S. & Kallestrup, P. (2020). Primary health care and nutrition. *Bulletin World Health Organization, 98,* 886-–893. http://dx.doi.org/10.2471/BLT.20.251413
Kretschmer, L., Salali, G. D., Andersen, L. B., Hallal, P. C., Northstone, K., Sardinha, L. B., & International Children's Accelerometry Database (ICAD) Collaborators Andersen LB Anderssen S. Cardon G. Davey R. Jago R. Janz KF Kriemler S. Møller N. Northstone K. Pate R. Puder JJ Reilly J. Salmon J. Sardinha LB van Sluijs EMF. (2023). Gender differences in the distribution of children's physical activity: evidence from nine countries. *International Journal of Behavioral Nutrition and Physical Activity*, *20*(1), 103. https://doi.org/10.1186/s12966-023-01496-0
Krisdapong, S., Prasertsom, P., Rattanarangsima, K., & Sheiham, A. (2013). School absence due to toothache associated with sociodemographic factors, dental caries status, and oral health-related quality of life in 12-and 15-year-old Thai children. *Journal of Public Health Dentistry, 73,* 321–28. https://doi.org/10.1111/jphd.12030
Lazzara, J. (2020). *Lifespan Development*. Creative Commons.
Lee, L. K., Fleegler, E. W., Goyal, M. K., Doh, K. F., Laraque-Arena, D., Hoffman, B. D., & COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION. (2022). Firearm-related injuries and deaths in children and youth: injury prevention and harm reduction. *Pediatrics*, *150*(6), Article e2022060070. https://doi.org/10.1542/peds.2022-060070
Liang, J., Matheson, B., Kaye, W., & Boutelle, K. (2014). Neurocognitive correlates of obesity and obesity-related behaviors in children and adolescents. *International Journal of Obesity, 38*(4), 494–506. https://doi.org/10.1038/ijo.2013.142
Lima, R. A., Bugge, A., Pfeiffer, K. A., & Andersen, L. B. (2017). Tracking of gross motor coordination from childhood into adolescence. *Research Quarterly for Exercise and Sport*, *88*(1), 52–59. https://doi.org/10.1080/02701367.2016.1264566
Liu, J., Ji, X., Pitt, S., Wang, G., Rovit, E., Lipman, T., & Jiang, F. (2024). Childhood sleep: physical, cognitive, and behavioral consequences and implications. *World journal of pediatrics: WJP*, *20*(2), 122–132. https://doi.org/10.1007/s12519-022-00647-w
Lupini, F., Rubinstein, T. B., Mackey, E. R., & Sule, S. (2023). Behavioral health outcomes and social determinants of health in children with diabetes and juvenile arthritis. *Research Square*. https://doi.org/10.21203%2Frs.3.rs-3610878%2Fv1
McCarthy, C. (2022). A refresher on childhood asthma: What families should know and do. *Harvard Health Publishing*. www.health.harvard.edu/blog/a-refresher-on-childhood-asthma-what-families-should-know-and-do-202207122780
Mendle, J. Beltz, A. M., Carter, R., & Dorn, L. D. (2019). Understanding puberty and its measurement: Ideas for research in a new generation. *Journal of Research in Adolescence, 29*(1), 82–95. https://doi.org/10.1111/jora.12371
Mulugeta, M. G., Bailey, G., Parsons, K., Gillespie, S., Johnson, L. M., Doh, K. F., Reisner, A.,... & Blackwell, L. S. (2024). Trends in pediatric firearm-related injuries and disparities in acute outcomes. *Frontiers in Public Health*, *12*, 1339394. https://doi.org/10.3389/fpubh.2024.1339394
Mumm, R., Ipsen, M. J., & Hermanussen, M. (2016). The association of weight, weight variability and socioeconomic situation among children. *European Journal of Clinical Nutrition, 70*(6), 650–652. https://doi.org/10.1038/ejcn.2016.21
Nelson, C.A., Zeanah, C.H., & Fox, N.A. (2019). How Early Experience Shapes Human Development: The Case of Psychosocial Deprivation. *Neural Plasticity*, 1676285. https://doi.org/10.1155/2019/1676285
Obita, G., & Alkhatib, A. (2023). Effectiveness of lifestyle nutrition and physical activity interventions for childhood obesity and associated comorbidities among children from minority ethnic groups: A systematic review and meta-analysis. *Nutrients, 15*(11), 2524. https://doi.org/10.3390/nu15112524
O'Brien, K. M., Barnes, C., Yoong, S., Campbell, E., Wyse, R., Delaney, T., Brown, A., Stacey, F., Davies, L., Lorien, S., & Hodder, R. K. (2021). School-based nutrition interventions in children aged 6 to 18 years: An umbrella review of systematic reviews. *Nutrients, 13*(11), 4113. https://doi.org/10.3390/nu13114113
Paller, K. A., Creery, J. D., & Schechtman, E. (2021). Memory and Sleep: How sleep cognition can change the waking mind for the better. *Annual Review of Psychology*, *72*, 123–150. https://doi.org/10.1146/annurev-psych-010419-050815
Parasuraman, S.R., Ghandour, R. M. & Kogan, M.D. (2020). Epidemiological profile of health and behaviors in middle childhood. *American Academy of Pediatrics, 145(6),* Article e20192244. https://doi.org/10.1542/peds.2019-2244
Paruthi, S., Brooks, L. J., D'Ambrosio, C., et al. (2016). Consensus statement of the American academy of sleep medicine on the recommended amount of sleep for healthy children: methodology and discussion. *Journal of Clinical Sleep Medicine,12*,1549–61. https://doi.org/10.5664/jcsm.6288
Perkins, J. M., Subramanian, S. V., Davey Smith, G., & Özaltin, E. (2016). Adult height, nutrition, and population health. *Nutrition Reviews*, *74*(3), 149–165. https://doi.org/10.1093/nutrit/nuv105
Qin, X., Zahran, H. S., Leon-Nguyen, M., Kilmer, G., Collins, P., Welch, P., & Malilay, J. (2022). Trends in asthma–related school health policies and practices in the US states. *The Journal of School Health*, *92*(3), 252–260. https://doi.org/10.1111/josh.13124
Ramos-Jorge J., Pordeus, I. A., Ramos-Jorge M. L., Marques, L. S., Paiva, S. M. (2014). Impact of untreated dental caries on quality of life of preschool children: different stages and activity. *Community Dental and Oral Epidemiology, 42*, 311–22. https://doi.org/10.1111/cdoe.12086
Reis, W. P., Ghamsary, M., Galustian, C., Galust, H., Herring, P., Gaio, J., & Dos Santos, H. (2020). Childhood Obesity: Is the built environment more important than the food environment?. *Clinical Medicine Insights: Pediatrics*, 14. https://doi.org/10.1177/1179556520932123
Roberts, B.K., Nofi, C.P., Cornell, E., Kapoor, S., Harrison, L., & Sathya, C. (2023). Trends and disparities in firearm deaths among children. *American Academy of Pediatrics, 152(3), Article* e2023061296. https://doi.org/10.1542/peds.2023-061296
Saavedra, J. M., & Prentice, A. M. (2023). Nutrition in school-age children: A rationale for revisiting priorities. *Nutrition Reviews*, *81*(7), 823-–843. https://doi.org/10.1093/nutrit/nuac089
Sahoo, K., Sahoo, B., Choudhury, A. K., Sofi, N. Y., Kumar, R., & Bhadoria, A. S. (2015). Childhood obesity: Causes and consequences. *Journal of Family Medicine and Primary Care*, *4*(2), 187–192. https://doi.org/10.4103/2249-4863.154628
Santos F, Sousa H, Gouveia ÉR, et al. (2023). School-Based Family-Oriented Health Interventions to Promote Physical Activity in Children and Adolescents: A Systematic Review. *American Journal of Health Promotion*, *37*(2), 243–262. https://doi.org/10.1177/08901171221113836
Scantlebury, N., Cunningham, T., Dockstader, C., Laughlin, S., Gaetz, W., Rocket, C., Dickson, J., & Mabbott, D. (2013). Relations between white matter maturation and reaction time in childhood. *Journal of the International Neuropsychological Society, 20*(1), 99–112. https://doi.org/10.1017/S1355617713001148
Schell, L.M., Gallo, M.V., Ravenscroft, J. (2009). Environmental influences on human growth and development: Historical review and case study of contemporary influences. *Annals of Human Biology. 36(5*), 459–77. https://doi.org/10.1080/03014460903067159
Stierman, B., Afful, J., Carroll, M. D., Chen, T. -C., Davy, O., Fink, S., Fryar, C. D., Gu, Q., Hales, C. M., Hughes, J. P., Ostchega, Y., Storandt, R. J., & Akinbami, L. J. (2021). *National health and nutrition examination survey 2017–March 2020 prepandemic data files—development of files and prevalence estimates for selected health outcomes* (National Health Statistics Report No. 158). National Center for Health Statistics. http://dx.doi.org/10.15620/cdc:106273
Stierman, B., et al. (2021). National Health and Nutrition Examination Survey 2017–March 2020 Prepandemic Data Files—Development of Files and Prevalence Estimates for Selected Health Outcomes. (158).
Suryawan, A., Jalaludin, M. Y., Poh, B. K., Sanusi, R., Tan, V. M. H., Geurts, J. M., & Muhardi, L. (2022). Malnutrition in early life and its neurodevelopmental and cognitive consequences: a scoping review. *Nutrition Research Reviews*, *35*(1), 136–149. https://doi.org/10.1017/S0954422421000159
Thompson, D.K., Matthews, L.G., Alexander, B., *Lee, K. J., Kelly, C. E., Adamson, C. L.,Hunt, R. W., Cheong, J. L. Y., Spencer–Smith, M., Neil, J. J., Seal, M. L., Inder, T. E., Doyle, L. W., & Anderson, P. J et al.* (2020). Tracking regional brain growth up to age 13 in children born term and very preterm. *Nature Communications, 11*, Article 696. https://doi.org/10.1038/s41467-020-14334-9
Thurstans, S., Sessions, N., Dolan, C., Sadler, K., Cichon, B., Isanaka, S., Roberfroid, D., Stobaugh, H., Webb, P., ... & Khara, T. (2022). The relationship between wasting and stunting in young children: A systematic review. *Maternal & Child Nutrition*, *18*(1), Article e13246. https://doi.org/10.1111/mcn.13246
Tupetz, A., Friedman, K., Zhao, D., Liao, H., Isenburg, M. V., Keating, E. M., Vissoci, J. R. N., & Staton, C. A. (2020). Prevention of childhood unintentional injuries in low- and middle-income countries: A systematic review. *PLOS ONE*, *15*(12), Article e0243464. https://doi.org/10.1371/journal.pone.0243464
UNICEF. Levels & Trends in Child Mortality Report 2018. (2019). https://www.unicef.org/reports/levels-and-trends-child-mortality-report-2018
U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2015–2020 Dietary Guidelines for Americans*. 8th Edition. December 2015. Available at http://health.gov/dietaryguidelines/2015/guidelines/
Van der Linde, J., Swanepoel, D. W., Glascoe, F. P., Louw, E. M., & Vinck, B. (2015). Developmental screening in South Africa: Comparing the national developmental checklist to a standardized tool. *African Health Sciences*, *15*(1), 188–196. https://doi.org/10.4314/ahs.v15i1.25
West, B.A., Rudd, R.A., Sauber-Schatz, E. K. & Ballesteros, M. F. (2021). Unintentional injury deaths in children and youth, 2010–2019. *Journal of Safety Research, 78,* 322–330. https://doi.org/10.1016/j.jsr.2021.07.001
Williamson, A.A., Mindell, J.A., Hiscock, H. & Quach, J. (2020). Longitudinal sleep problem trajectories are associated with multiple impairments in child well-being. *The Journal of Child Psychology and Psychiatry, 61(10),* 1092–1103. https://doi.org/10.1111/jcpp.13303
World Health Organization (WHO; 2024). Asthma. www.who.int/news-room/fact-sheets/detail/asthma
Xiang, M., Zhang, Z. & Kuwahara, K. (2020). Impact of COVID-19 pandemic on children and adolescents' lifestyle behavior larger than expected. *Progress in Cardiovascular Diseases*. https://doi.org/10.1016/j.pcad.2020.04.013
Zaffanello, M., Pietrobelli, A., Cavarzere, P., Guzzo, A., & Antoniazzi, F. (2024). Complex relationship between growth hormone and sleep in children: Insights, discrepancies, and implications. *Frontiers in Endocrinology*, *14*, Article 1332114. https://doi.org/10.3389/fendo.2023.1332114

7.2 Cognition in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the cognitive milestones of middle childhood
- Evaluate the impact of Piaget's concrete operational stage on middle childhood
- Describe the information-processing perspective on middle childhood

Ayanna is a new second grade teacher and is thinking about her lesson plans. She has a seven-year-old student, Sarah, who struggles with attention and focus in the classroom. Sarah often gets distracted during lessons and has difficulty staying on task. Nonetheless, Sarah seems to thrive during classroom learning games and artistic activities.

Ayanna also teaches James, who has been diagnosed with dyslexia. He struggles with reading and writing tasks; he reverses letters and has trouble with phonemic awareness. James's cognitive challenges impact his confidence and self-esteem, as he feels discouraged by his struggles in comparison to his peers. However, James loves the hands-on science experiments in class and is always eager to help his classmates.

Ayanna knows that all her students are making incredible gains in their abilities to think logically and process information. She can ask children to solve problems that include concrete information. She has also started to teach them basic strategies for memorizing information, but may need to use a variety of teaching strategies to meet the individualized needs of her students.

Children's abilities to think logically and process information changes throughout middle childhood as they pass through various stages of cognitive development.

Cognitive Milestones

During middle childhood, children make impressive gains in cognitive development. Their ability to think logically and flexibly and remember information increases dramatically. Although their thinking, problem-solving, and language use is becoming more sophisticated, they're not yet adult-like in their cognitive abilities. Table 7.2 shows some of the major cognitive achievements children will likely make by the end of middle childhood. Some of these milestones develop earlier in middle childhood, such as the ability to tell time, while other milestones develop later in middle childhood, such as the ability to understand and use fractions. Other important milestones are abilities that further develop across early and middle childhood, such as the ability to think symbolically or to recognize and understand the perspectives of others.

Typical Cognitive Abilities	Example
Tell time	Children can learn to read an analog clock.
Recognize and understand the perspectives of others	Children can understand that other people may have different beliefs and opinions.
Think symbolically about their world	Children can use language and art to represent objects and events.
Understand cause-and-effect relationships	Children will understand that if you take an ice cream cone outside on a hot day, it will melt quickly.
Read a book and understand paragraphs	Children move from picture books to chapter books.

TABLE 7.2 Cognitive Milestones during Middle Childhood (7–12 years)

Typical Cognitive Abilities	Example
Begin thinking logically and apply improved problem-solving abilities	Children can solve logical problems that involve quantity, such as a math problem.
Have longer attention spans	Children's attention spans increase with age and range from around twelve to thirty-six minutes depending on the task, such as practicing a musical instrument without needing a break.
Show significant improvements in memory	Children learn to apply memory strategies like rehearsal to remember information, such as learning a rhyme to remember the number or days in each month of the year.
Understand math principles, including manipulation of numbers and whole versus part	Children learn to count backwards, add and subtract whole numbers, and add and subtract fractions.
Understand conservation of objects	Children understand that breaking a cookie does not mean that there is more cookie just because there are two pieces instead of one.

TABLE 7.2 Cognitive Milestones during Middle Childhood (7–12 years)

Child development is a dynamic process, influenced by the interactions children have with the world around them. So, a range of ages rather than a single point in time is typically considered "normal" for the development of various skills. The culture in which children develop and the way caregivers share information with children varies dramatically and influences children's learning and skill development. For example, in the United States, parents use active teaching strategies such as praise to guide children, while parents in Vanuatu, a small island country in the southern Pacific Ocean, are more likely to collaborate with children as a form of teaching (Clegg et al., 2021). Language is another important aspect of cognitive development that is impacted by culture. For example, beginning in infancy, German mothers focus on the individual needs or desires of their child, which highlights their view of the child as a unique individual. Mothers of the Cameroonian Nso focus more on the social environment they and their child are in (Vierhaus et al., 2011). This means that children are likely to show individual and cultural differences in the timing of reaching cognitive milestones.

Families and peers are also important influences for cognitive development during middle childhood. For example, parents play an important role in providing a stimulating environment for their children by interacting with them verbally and providing structured activities that allows them to explore their world. Relatively new research has also shown that fathers, as well as mothers, play an important role in the cognitive development of their children by engaging with them through reading, the use of language during interactions, and responsive parenting (Varghese & Wachen, 2016). Whereas mothers tend to use words that are familiar to children, fathers tend to use a larger variety of words, which is helpful for developing the vocabulary of their children (Vernon-Feagans et al., 2010). Fathers also tend to use more affirmations and action directives than mothers (Tamis-LeMonda et al., 2012). Of course, as discussed in other chapters, there are many individual differences in families, caregivers, and the roles caregivers may play in fostering healthy cognitive development.

As you will learn in 8.3 Social Contexts: Peers, Family, and Media in Middle Childhood, children begin to spend more time with their peers, and their friendships become an increasingly important influence on cognitive development (Figure 7.7). Children learn new knowledge and skills from each other through interactions and play. They also develop new interests by observing the interests of their peers. In fact, children may learn a great deal from peers, and peer relationships play an important role in learning and cognitive development

(Laursen & Veenstra, 2022; Leece et al., 2019). For example, working with peers can enhance problem-solving and creative thinking (Lew-Levy et al., 2023). This peer learning is consistent across cultures even in cultures that emphasize the importance of adult-child transmission of learning (Lew-Levy et al., 2023).

FIGURE 7.7 Middle childhood is when children reach many cognitive milestones, such as improved reading and problem-solving skills, in part through collaborative learning experiences with peers. (credit: "Photos of elementary students using iPads at school to do amazing projects" by Lexie Flickinger, Brad Flickinger/Flickr, CC BY 2.0)

Concrete Operations in the Stage Theory of Cognitive Development

As you've learned, cognitive developmental theories focus on the way thought processes change with age, and how these changes in children's thinking influence the way they understand the world and interact with it. Recall that theorist Jean Piaget proposed a cognitive developmental theory describing stages that reflect qualitatively different ways of thinking. Subsequent cross-cultural research studying areas including Bali, Indonesia, India, and Nepal, found that the sequence of stages is generally the same across cultures, and the cognitive processes within those stages are the same (Dasen, 2022).

Piaget's concrete operational stage begins around age seven and continues until approximately age eleven, although cross-cultural research has found a fair amount of variation in the age at which children reach its various substages (Dasen, 2022). During this stage, children become capable of using logic to solve concrete problems they can directly experience and that involve tangible objects. For example, when comparing the sizes of objects, children will place them side-by-side to measure the size before lining them up by size. However, they are not yet able to apply logic to abstract or hypothetical situations, such as imagining the consequences of a world made from candy.

Concrete Operational Thought

In the stage of **concrete operational thinking**, children begin to understand basic logical principles and concepts such as cause-and-effect relationships, size, and distance (Piaget, 1971). They are now capable of operations, cognitive actions that use logic and are reversible, and can accurately imagine the consequences of various actions they observe or experience. One such operation is conservation, the property by which the amount of something does not change even if the appearance of that thing changes.

In Piaget's famous most well-known example of conservation, a researcher poured liquid from one container into another of a different shape (5.3 Cognition in Early Childhood). Although we understand that the amount of liquid does not change, children who do not yet understand operations believe taller but thinner containers have more liquid than shorter, wider ones. Children in the concrete operational stage, however, understand that the amount of liquid remains the same, indicating they understand conservation of volume.

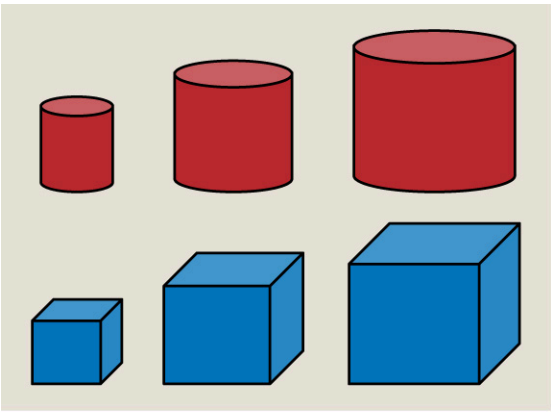
Children also demonstrate their understanding of conservation with quantities when they recognize that the

number of candies does not change whether you spread them out or put them in a pile. They also know that stretching a ball of clay into the shape of a snake does not change the amount of clay. Although an understanding of conservation occurs at similar ages in most countries, the exact age at which children develop it and the type of conservation they first understand does differ across some cultures (Goldschmid et al., 1973). For example, they may learn conservation of shape before conservation of volume based on their experience with the objects around them.

One reason children in this age group come to understand conservation is that they can now focus on more than one aspect of the task, a skill referred to as decentration. In other words, in a conservation of volume task, children at this age can focus on both the height and width of the containers that hold liquid and may make comments like, "The taller glass has the same amount of water as the shorter glass because it's skinnier." When a child is unable to decenter, they will often indicate that the taller glass has more liquid because they are only focusing on height and ignoring the width of the glass. They also demonstrate an awareness of reversibility, which is closely related to their understanding of conservation. Reversibility is the process by which we can reverse a sequence of events, returning to the starting point. For example, children who understand reversibility are aware that liquid poured from a shorter, wider container into a taller, thinner one can be poured back, and the amount will not have changed.

Children are also able to accurately complete Piaget's class inclusion problem between the ages of seven and ten, meaning that they now understand classification groupings and hierarchies, another type of operation. The ability to grasp hierarchical classification allows them to sort objects into both general and more specific groups. For example, children at this age who are shown four apples and three bananas can correctly tell you that there are more apples than bananas, and that there are more total fruits (seven, if you combine the four apples and three bananas) than apples (four). This shows they can simultaneously focus on a larger class (fruit) as well as two subclasses (apples and bananas).

During the concrete operational stage, children also develop the ability to sort objects along multiple dimensions. For example, a child can sort their stuffed animals both by size and by color. This operation involves organizing things in a series, known as **seriation**. One task Piaget used to test seriation required children to take sticks of different lengths and arrange them from shortest to longest (Figure 7.8) (Inhelder & Piaget, 1958). Children can do this quickly and efficiently by the beginning of the concrete operational stage. Children can also demonstrate transitive inference during seriation tasks. This is the ability to use existing knowledge to find missing information. For example, if you ask an eight-year-old, "If Andrew is taller than Brianna, and Brianna is taller than Cleo, who's the shortest?" they can correctly infer that Cleo is the shortest.



(a)

(b)

FIGURE 7.8 Children can now sort objects according to more than one category or dimension (a) such as color, shape, and size, and can apply this seriation to (b) real-world sorting such as with these building toys. (credit a: attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license; credit b: "Child Playing with Blocks" by Diana Riser/Flickr, CC BY 4.0)

Recall that one of the characteristics of the preoperational stage of cognitive development, which includes children from the ages of three through seven, is egocentrism, which means young children struggle to differentiate their thoughts and feelings from those of others. However, during the concrete operational stage, children begin to consider how others might think and feel. In other words, they become less egocentric. In the classic three-mountains task by Piaget (discussed in 5.3 Cognition in Early Childhood), children in the concrete operational stage can describe what the mountain scene would look like from the perspective of a child sitting on the other side of the table.

Evaluation and Impact of the Concrete Operational Stage

Was Piaget's description of the concrete operational stage and skills that children demonstrate in this stage and age range accurate and informative?

In many ways, Piaget's description of the concrete operational stage has held up well to scrutiny. However, as discussed earlier, there are differences in how children demonstrate concrete operational skills across the world. Other research has shown that cognitive development may not be as stage-like as the theory suggests. For example, some children show aspects of concrete operational thought before the age of seven, which is earlier than Piaget believed it first appeared (McGarrigle & Donaldson, 1974). Children can achieve earlier understanding of some operations, such as conservation, when they are specifically exposed to tasks in which adults demonstrate them (Dasen, 2022). On the other hand, another study found that many children may reach Piaget's stages later than they did thirty years ago (Flynn & Shayer, 2018), which may be due to drops in education budgets and in the overall quality of education in many countries. Despite these criticisms, Piaget's theory offers a window into the many cognitive advancements that happen during middle childhood.

Piaget's approach to cognitive development among school-aged children has had a tremendous impact on education (Zhang, 2022). Many schools use his principles to determine how to educate children and when to introduce concepts such as addition and subtraction. Many schools also provide students with opportunities to learn through active learning, such as building a volcano in science class, rather than just reading about volcanos. However, despite this understanding of the importance of active learning for children, we are seeing increases in the amount of time that children engage with screens, even in school settings (Muppalla et al., 2023). Screen media use is associated with poorer academic performance, along with other potential adverse effects on development.

IT DEPENDS

Are There Cognitive Benefits to Screen Media Usage?

Mobile devices and interactive media have become a part of the everyday lives of children. In fact, we now consider children "digital natives" because they have always been surrounded by mobile and other interactive devices. As a result, parents and professionals who work with children have wondered whether there are any developmental benefits to screen media use by children. Researchers have been exploring this very issue.

Frequent screen use, often defined as more than two hours a day, has been found to have several negative outcomes (Liu et al., 2021). Excessive screen use has been associated with physical, behavioral, and academic problems (Muppalla et al., 2023; Robinson et al., 2017). For example, higher use of screens has been associated with lower cognitive functioning and lower psychological health (Liu et al., 2021).

Given these results, what positive outcomes can children experience from screen use? The answer is that it depends in part on how screens are being used. Not surprisingly, the content matters. Potential positive benefits of screen use include opportunities for increased communication and greater access to information and educational opportunities, especially when parents or schools use technology as a learning tool (Panjeti-Madan & Ranganathan, 2023). For example, children can use online encyclopedias and dictionaries to find answers to questions and can maintain social connections with friends who may live far away. Studies have also shown that

when screen media is designed to enhance reading and other cognitive skills it may can improve performance (Muppalla et al., 2023).

What does all this tell us about the impact of screen use and interactive media on children? Professionals and caregivers must acknowledge the possible disadvantages of excessive screen use. The American Academy of Pediatrics (AAP, 2021) no longer has strict recommended limits for screen time. Rather, they recommend that parents make an informed decision about how children should use media outside of a school setting, keeping in mind that children need adequate sleep and physical activity. They also advise that media consist of high-quality programming with an educational focus. Parents can manage screen time by setting limits, monitoring content, and encouraging children to use more educational media tools. Finally, caregivers should add alternate activities that allow children to improve their physical, cognitive, linguistic, and socioemotional development in other ways.

Information Processing Perspective

Recall that information processing theory (1.3 Major Theories and Theorists) compares the way people think to how computers process, store, and retrieve information. Information processing theory informs our understanding of memory, attention, and executive functions, such as the ability to plan how to approach large projects or organize time. All these aspects of cognition are developing rapidly during middle childhood and become increasingly relevant as children begin formal schooling.

Unlike Piaget's theory of cognitive development, which focuses on the qualitative differences in development that occur as children grow older, information processing theory describes quantitative changes in cognition. In other words, information processing theory describes how children become faster and more efficient in their reasoning and use of memory. It posits that cognitive development is continuous, rather than consisting of discrete stages. Also, unlike Piaget's theory, information processing theory is not the work of one theorist. Instead, it is based on the research and ideas of multiple researchers who shared an interest in understanding how humans develop reasoning and processing skills.

As you might expect, school-aged children can process information more accurately and rapidly and are more efficient at retaining that information than they were during early childhood. They also show significant gains in

- their ability to determine what information to attend to,
- their ability to attend to information for longer periods,
- their grasp of how their memory works, and
- their use of strategies to improve retention and recall.

Here you'll consider the development of other cognitive abilities, including attention, memory, metacognition, and executive functions in more detail. You will also consider how theory of mind changes in middle childhood.

Attention

Selective attention is the ability to stay focused on one thing while ignoring distracting information that is not relevant to the task at hand. Although this skill shows steady improvement throughout childhood and into adolescence, many individual differences among children exist. Considerable research has shown that the child's temperament is associated with selective attention (Rothbart & Prueda, 2005). For example, children with better self-regulation skills perform better on tasks involving selective attention (Rueda et al., 2005).

Sustained attention is the ability to attend to a single task for extended periods of time (Figure 7.9), while the ability to shift from one task or stimulus to another is called divided attention. Although these skills are also improving throughout childhood and into adolescence (Carlson et al., 2013), children have a limited capacity for attention, influenced by many factors, including anxiety, the task's level of difficulty, and their existing

skills (Sternberg & Sternberg, 2011). For example, you may remember being distracted at school and gazing out the window at other children on the playground when you were supposed to be focusing on your schoolwork.

FIGURE 7.9 As children begin to maintain attention for longer periods of time on more complex tasks, they become interested in projects that require sustained attention, such as building models. (credit: "Ben Ciprios with James Webb Space Telescope LEGO model" by NASA's James Webb Space Telescope/Flickr, CC BY 2.0)

Memory

Related to improvements in attention are the gains in children's working memory and their use of encoding strategies to improve memory. Recall from 3.4 Cognition and Memory in Infants and Toddlers that short-term memory allows us to store information in our mind for a short time, and long-term memory is a more permanent storage of information. Working memory combines aspects of attentional control with short-term memory storage and involves an active manipulation of information. During middle childhood, working memory improves. For example, if you recite a list of ten items such as (fork, frog, horse, plate, cup, dog, cat, spoon, knife, bowl) to a child, they can repeat it back to you by organizing the information into categories (dishes and animals). The process of transferring information from short-term/working memory to long-term memory is called encoding. Middle childhood is the time when children begin using more effective encoding strategies to improve their ability to move information from short-term/working memory to long-term memory (Bjorklund et al., 2008). Encoding strategies include rehearsing items, grouping items into categories, and spending more time studying harder items rather than easy ones. Children can start using these strategies around five to six years of age, but they are able to use them more efficiently around age seven, after which this ability continues to increase through age ten (Schneider et al., 2009). Children continue to use more complex encoding strategies as they move through middle childhood. Some of the more frequently used memory strategies are rehearsal, elaboration, and organization. Descriptions and examples of each of these are provided in Table 7.3.

Memory Strategy	Definition	Example
Rehearsal	Practicing to learn new information	Children repeat a vocabulary word over and over to learn it for a vocabulary quiz.
Elaboration	Connecting new information to existing knowledge	Children help with baking at home and may recognize fractions in math class from the recipes they have used.
Organization	Arranging bits of information in an ordered manner, such as using groups or categories	Children learn the acronym "ROY G BIV" to help remember the order of the colors in the spectrum.

TABLE 7.3 Memory Strategies Frequently Used by School-Aged Children

Metacognition

Another reason children develop more sophisticated cognitive skills during middle childhood is that they are also developing **metacognition**, or knowledge about how we think and learn, and how we use that awareness to become better thinkers and learners. For example, children begin to understand that they may need to reread a paragraph if they didn't understand it after the first reading.

As they move into middle childhood, children show a grasp of **metamemory**, an understanding of how memory works (Kvavilashvili & Ford, 2022). For example, they recognize that it is easier to remember short lists than long lists and that they have involuntary memories (memories they can retrieve with no deliberate effort). Younger children tend to think they are better at a task than they are and that they have better memories than they possess, but the ability to accurately evaluate their cognitive skill continues to improve into adolescence. Then again, adults often struggle with these same issues!

Executive Functions

Executive functions are the cognitive skills we need to control or self-regulate our behavior and to work toward goals. They include skills such as working memory and attentional control, and others such as inhibition, problem-solving, self-control, mental flexibility, and planning and organization.

Executive functions begin to develop during the preschool years but continue to mature through middle childhood and into adolescence. In fact, middle childhood is an important period for the development of executive functions because of the increasing social and academic demands associated with formal schooling. These skills are closely tied to maturation of the prefrontal cortex in the brain that is taking place during the preadolescent years, and they are also influenced by the presence of warm and responsive parents and by cognitively stimulating environments (Bourrier et al., 2018; Fay-Stammbach et al., 2014). Executive functions are also associated with school readiness, academic achievement, and social behavior (Poon, 2018). Thus, schools or intervention programs that target executive functions may see significant rewards as children use those skills to be successful in academic and social settings.

Theory of Mind

Another cognitive ability related to frontal lobe functioning and executive functions is theory of mind: the awareness of your own mental states and the understanding that others have thoughts, beliefs, and perspectives different from your own (Figure 7.10). As discussed in 5.3 Cognition in Early Childhood, theory of mind typically emerges between the ages of four and five. However, it continues to develop for the next several years. Children are increasingly able to predict what others are thinking and feeling and develop an understanding of complex mental abilities from various perspectives.

FIGURE 7.10 Theory of mind and effective perspective taking is associated with improved peer relationships and school engagement. (credit: modification of work "Girls Laughing" by Alyssa Sieb/nappy, Public Domain)

Theory of mind has been linked to better academic achievement. There are several explanations for this (Lecce & Devine, 2022). First, theory of mind is likely associated with better relationships with peers and teachers which may increase school engagement. Second, children who understand their own mind as well as the minds of others have higher levels of reading comprehension because they understand the message that the author is intending to convey and the minds of the characters in the texts that they read (Kim, 2017). Similarly, theory of mind is associated with scientific reasoning. Children who understand the minds of others are better able to create and evaluate hypotheses (Kyriakopoulou & Vosniadou, 2020).

There are individual differences in the development of theory of mind. For example, children diagnosed with some developmental disabilities, including autism spectrum disorder and social anxiety disorder, often have deficits in theory of mind (Spek et al., 2010; Washburn et al., 2016). Understanding these differences can provide therapists, teachers, and parents with information to help understand the thoughts and behaviors of children with these disorders and can aid in planning teaching strategies to explicitly teach perspective-taking.

Cultural differences also exist. Children in collectivist cultures like China and India tend to recognize later than children in individualistic cultures like the United States and Australia that others have different beliefs and opinions (Shahaeian et al., 2011). A recent systematic review of studies on cultural variations in theory of mind and related constructs such as empathy and perspective-taking indicated that cross-cultural differences in language use, cultural values, and parenting styles may lead to differences in development of these skills (Aival-Naveh et al., 2019). A likely reason is that individualistic cultures emphasize recognizing differences in opinions, thoughts, and beliefs more than collectivist cultures do.

References

Aival-Naveh, E., Rothschild-Yakar, L., & Kurman, J. (2019). Keeping culture in mind: A systematic review and initial conceptualization of mentalizing from a cross-cultural perspective. *Clinical Psychology: Science and Practice, 26*(4), Article e12300. https://doi.org/10.1111/cpsp.12300

American Academy of Pediatrics (2021). Beyond screen time: A parent's guide to media use. *Patient Education*. https://doi.org/10.1542/peo_document099

Bjorklund, D. F., Dukes, C., & Brown, R. D. (2008). The development of memory strategies. *The development of memory in infancy and childhood* (pp. 157–188). Psychology Press. https://psycnet.apa.org/record/2007-03302-007

Bourrier, S. C., Berman, M. G., & Enns, J. T. (2018). Cognitive strategies and natural environments interact in influencing executive function. *Frontiers in Psychology, 9*, 1248. https://doi.org/10.3389/fpsyg.2018.01248

Carlson, S.M., Koenig, M.A., & Harms, M.B. (2013). Theory of mind. *WIREs Cognitive Science, 4*(4), 391–402. https://doi.org/10.1002/wcs.1232

Clegg J. M., Wen N. J., DeBaylo P. H., Alcott A., Keltner E., Legare C. H. (2021). Teaching through collaboration: Flexibility and diversity in caregiver-child interaction across cultures. *Child Development*, 92(1), e56–e75. https://doi.org/10.1111/cdev.13443

Dasen, P.R. (2022). Culture and cognitive development. *Journal of Cross-cultural Psychology, 53(7-8),* 789-816. https://doi.org/10.1177/00220221221092409

Fay-Stammbach, T., Hawes, D. J., & Meredith, P. (2014). Parenting influences on executive function in early childhood: A review. *Child Development Perspectives, 8*(4),

258–264. https://doi.org/10.1111/cdep.12095
Flynn, J. R., & Shayer, M. (2018). IQ decline and Piaget: Does the rot start at the top?. *Intelligence*, *66*, 112–121. https://doi.org/10.1016/j.intell.2017.11.010
Goldschmid, M. L.; Bentler, P. M.; Debus, R. L.; Rawlinson, R.; Kohnstamm, D.; Modgil, S.; Nicholls, J. F.; Reykowski, J.; Strupczewska, B; Warren, N. (1973). A cross-cultural investigation of conservation. Journal of Cross-Cultural Psychology, 4, 75–88. https://doi.org/10.1177/002202217300400106
Inhelder, B., & Piaget, J. (1958). The growth of logical thinking: From childhood to adolescence. (A. Parsons & S. Milgram, Trans.). Basic Books. https://doi.org/10.1037/10034-000
Kim, Y.-S. G. (2017). Why the simple view of reading is not simplistic: Unpacking component skills of reading using a direct and indirect effect model of reading (DIER). Scientific Studies of Reading, 21(4), 310–333. https://doi.org/10.1080/10888438.2017.1291643
Kvavilashvili, L. & Ford, R.M. (2022). Metamemory for involuntary autobiographical memories and semantic mind-pops in 5-, 7- and 9-year old children and young adults. Child Development, 93(5), e484-500. https://doi.org/10.1111/cdev.13794
Kyriakopoulou, N., & Vosniadou, S. (2020). Theory of mind, personal epistemology, and science learning: Exploring common conceptual components. *Frontiers in Psychology*, *11*, Article 531223. https://doi.org/10.3389/fpsyg.2020.01140
Laursen, B. & Veenstra, R. (2022). In defense of peer influence: The unheralded benefits of conformity. *Child Development Perspectives*, *17*(1), 74–80. https://doi.org/10.1111/cdep.12477
Lecce, S., & Devine, R. T. (2022). Theory of mind at school: Academic outcomes and the influence of the school context. *Infant and Child Development*, *31*(1), Article e2274. https://doi.org/10.1002/icd.2274
Leece, S., Bianco, F., & Ronchi, L. (2019). Executive function in the school context: The role of peer relationships. *Infant and Child Development*, *29*(1), Article e2151. https://doi.org/10.1002/icd.2151
Lew-Levy, S., van den Bos, W., Corriveau, K., Dutra, N., Flynn, E., O'Sullivan, E., Pope–Caldwell, S., Rawlings, B., Smolla, M., Xu, J., & Wood, L. (2023). Peer learning and cultural evolution. *Child Development Perspectives, 17*(2), 97–105. https://doi.org/10.1111/cdep.12482
Liu, J., Riesch, S., Tiene, J., Lipman, T., Pinto-Martin, J., & O'Sullivan, A. (2021). Screen media overuse and associated physical, cognitive, and emotional/behavioral outcomes in children and adolescents: An integrative review. Journal of Pediatric Health Care, 36(2), 99–109. https://doi.org/10.1016/j.pedhc.2021.06.003
McGarrigle, J., & Donaldson, M. (1974). Conservation accidents. *Cognition*, 3, 341–350. https://doi.org/10.1016/0010-0277(74)90003-1
Muppalla, S. K., Vuppalapati, S., Reddy Pulliahgaru, A., & Sreenivasulu, H. (2023). Effects of excessive screen time on child development: An updated review and strategies for management. *Cureus*, *15*(6), Article e40608. https://doi.org/10.7759/cureus.40608
Panjeti-–Madan, V. N., & Ranganathan, P. (2023). Impact of screen time on children's development: cognitive, language, physical, and social and emotional domains. *Multimodal Technologies and Interaction*, *7*(5), 52. https://doi.org/10.3390/mti7050052
Piaget, J. (1971). The theory of stages in cognitive development. In D. R. Green, M. P. Ford, & G. B. Flamer. *Measurement and Piaget*. McGraw-Hill.
Poon, K. (2018). Hot and cool executive functions in adolescence: development and contributions to important developmental outcomes. *Frontiers in Psychology 8:2311*. https://doi.org/10.3389/fpsyg.2017.02311
Robinson, T. N., Banda, J. A., Hale, L., Lu, A. S., Fleming-Milici, F., Calvert, S. L., & Wartella, E. (2017). Screen media exposure and obesity in children and adolescents. *Pediatrics*, *140*(Suppl 2), S97–S101. https://doi.org/10.1542/peds.2016-1758K
Rothbart, M. K., & Rueda, M. R. (2005). The development of effortful control. In U. Mayr, E. Awh, & S. W. Keele (Eds.). *Developing individuality in the human brain: A tribute to Michael I. Posner* (pp. 167–188). American Psychological Association. https://doi.org/10.1037/11108-009
Rueda, M. R., Posner, M. I., & Rothbart, M. K. (2005). The Development of Executive Attention: Contributions to the Emergence of Self-Regulation. *Developmental Neuropsychology, 28*(2), 573–594. https://doi.org/10.1207/s15326942dn2802_2
Schneider, W., Kron-Sperl, V., & Hünnerkopf, M. (2009). The development of young children's memory strategies: Evidence from the Würzburg Longitudinal Memory Study. *European Journal of Developmental Psychology, 6*, 70 -99. https://doi.org/10.1080/17405620701336802
Shahaeian, A., Peterson, C.C., Slaughter, V., & Wellman, H.M. (2011). Culture and the sequence of steps in theory of mind development. *Developmental Psychology, 47*(5), 1239–1247. https://doi.org/10.1037/a0023899
Spek, A. A., Scholte, E. M., & Van Berckelaer-Onnes, I. A. (2010). Theory of mind in adults with HFA and Asperger syndrome. *Journal of Autism and Developmental Disorders, 40*(3), 280-289. https://doi.org/10.1007/s10803-009-0860-y
Sternberg,R.J. & Sternberg, K. (2011). *Cognitive Psychology*. Wadsworth/Cengage Learning.
Tamis-LeMonda, C. S., Baumwell, L., & Cristofaro, T. (2012). Parent–child conversations during play. *First Language, 32*(4), 413–438. https://doi.org/10.1177/0142723711419321
Varghese C., & Wachen J. (2016). The determinants of father involvement and connection to children's literacy and language outcomes: a review of literature. *Marriage Family Review* 52, 331–359. https://doi.org/10.1080/01494929.2015.1099587
Vernon-Feagans, L., Gallagher, K. C., & Kainz, K. (2010). The transition to school in rural America. In J. Meece & J. Eccles (Eds.), *Handbook of research on schools, schooling, and human development* (pp. 163–184). New York, NY: Routledge. https://www.semanticscholar.org/paper/The-Transition-to-School-in-Rural-America-Vernon-Feagans-Gallagher/d2fdd07ec93d7f4b104a633b31381368d4ee696d
Vierhaus, M., Lohaus, A., Kolling, T., Teubert, M., Keller, H., Fassbender, I., Freitag, C., Goertz, C., Graf, F. Lamm, B., Spangler, S. M., Knopf, M., &... Schwarzer, G. (2011). The development of 3- to 9-month-old infants in two cultural contexts: Bayley longitudinal results for Cameroonian and German infants. *European Journal of Developmental Psychology*, *8*(3), 349–366. https://doi.org/10.1080/17405629.2010.505392
Washburn, D., Wilson, G., Roes, M., Rnic, K., & Harkness, K. L. (2016). Theory of mind in social anxiety disorder, depression, and comorbid conditions. *Journal of Anxiety Disorders, 37*, 71–77. https://doi.org/10.1016/j.janxdis.2015.11.004
Zhang, J. (2022). The influence of Piaget in the field of learning science. *Higher Education Studies, 12*(3), 162–168. https://doi.org/10.5539/hes.v12n3p162

7.3 Intelligence in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Understand genetic and environmental influences on intelligence
- Describe different theories of intelligence
- Analyze various types of intelligence tests
- Describe intellectual disabilities and intellectual giftedness

Malik has been thinking about the range of strengths he sees in his fourth-grade students. While some clearly excel at reading or math, others struggle with schoolwork but are very artistic. A few are athletic or love music. He wants to find ways to help his students discover and develop their strengths because he understands that they will thrive when they feel competent; he knows that self-efficacy is important for optimal development.

At the broadest level, **intelligence** describes an individual's ability to adapt to the world around them (Sternberg, 2014). It includes several skills, including creativity, problem-solving, abstract reasoning, and the ability to learn. You will learn about several theoretical approaches that consider how to define and measure intelligence as well as whether intelligence is a single ability or consists of multiple different abilities. But you'll begin by considering both genetic and environmental contributions.

Genetic and Environmental Influences

Intelligence varies quite a bit across children and is influenced by both genetic and environmental factors. Studies of genetic influence on intelligence have often looked at adopted children and twins to examine similarities and differences in intelligence. Some researchers have explored whether specific areas of the genome, the individual's complete set of genetic material, are associated with measures of intelligence (Bartels et al., 2022; Deary et al., 2022). Although this work has shown that there *is* a genetic influence on intelligence, it has not identified specific genes. In fact, intelligence is likely influenced by the combination of many genes (Sniekers et al., 2017).

Environmental factors also influence the development of intelligence in children. For example, prenatal and postnatal exposure to radiation or lead can negatively affect intelligence (McFarland et al., 2022). Access to healthy developmental resources is positively related to intelligence. For example, children who eat a daily breakfast score higher on intelligence tests than children who do not (Roberts et al., 2022). Experiences that stimulate the child's brain, such as extracurricular activities, high-quality toys and books, and events such as travel can have a positive impact on intelligence (Dunkel et al., 2023) (Figure 7.11). Children from a lower SES tend to perform less well on intelligence tests than children from higher SES backgrounds (von Stumm & Plomin, 2015). These differences are likely due to the greater access to learning experiences and resources often available to families with a higher SES. Regardless of SES, parent characteristics such as their educational beliefs or having a growth mindset—the belief that abilities can improve through work and effort—have also been associated with higher child intelligence (Elansary et al., 2021). For example, when parents believe that the abilities of their children can change, children are more persistent and have better reading skills (Song et al., 2022). The number of contributing factors shows just how complicated it is to study and understand the way intelligence develops during childhood. You'll consider various theories and factors in this section.

FIGURE 7.11 Enriching and stimulating experiences like nature walks, travel, and engaging learning activities can improve intelligence and cognitive development. (credit: "Class Field Trip" by Paul Martinez, Joshua Tree National Park/Flickr, Public Domain)

LINK TO LEARNING

Research supports the idea that environmental experiences can impact intelligence. Read this article from the Harvard Gazette about how parental beliefs about the cognitive abilities of children can impact intelligence (https://openstax.org/r/104CogAbilities) to learn more.

Theories of Intelligence

Several theories of intelligence have been developed over the years. Some suggest that intelligence is a general ability, whereas others argue that many specific skills can be considered components of it.

General Intelligence

Around the turn of the twentieth century, French psychologist Alfred Binet, along with his colleague Theodore Simon, developed a test that the French government used to identify children who needed academic support. This intelligence test included a variety of tasks, such as defining words, naming objects, constructing and completing sentences, and comparing items. Although the questions were quite different from one another, children who did well on one typically got others correct as well.

English psychologist Charles Spearman used those results to suggest that this strong positive correlation was due to a general cognitive factor that underlies multiple cognitive skills, which he called the **general intelligence factor (g)**. For example, when a child is considered intelligent, many people generalize this judgment to all cognitive abilities, and expect a child to excel in all their academic classes. Although many psychologists generally agree that the "g-factor" does exist, there is also support for the presence of more specific skills, which Spearman referred to as specific intelligences.

One of Spearman's biggest critics was Raymond Cattell, a student of his who argued that general intelligence is composed of **fluid intelligence** and **crystallized intelligence**. The ability to use logic and solve problems in new ways is fluid intelligence; crystallized intelligence is the existing knowledge individuals have developed during their life through education and experience. Children using information they read in a book to complete homework or solve equations on a test are using crystallized intelligence, whereas figuring out a new way to get home from a friend's house is demonstrating fluid intelligence (Figure 7.12).

FIGURE 7.12 Curiosity and exploring their world are important factors that can enhance intelligence during childhood. (credit: "Hiccups by Plasmart" by PlaSmart Inc/Flickr, CC BY 2.0)

LINK TO LEARNING

Although there are some good uses for intelligence tests, they are not without their criticisms. Watch this Ted talk about some of the criticisms of intelligence tests (https://openstax.org/r/104IntelligTest) to learn more.

Multiple Intelligences

In response to Spearman's concept of general intelligence, other psychologists proposed multiple multiple-factor theories of intelligence (Thurstone, 1946; Gardner & Hatch, 1989). Howard Gardner proposed multiple intelligences that compose to a person's particular abilities (Gardner & Moran, 2006). Gardner's theory proposes eight distinct types of intelligence that may better inform a student's unique learning than a focus on a singular intelligence (Gardner & Moran, 2006) (Table 7.4).

Intelligence	Description
Linguistic	Using language to communicate clearly
Logical-mathematical	Solving problems using logic and mathematical skills
Spatial	Thinking and reasoning about objects in three dimensions
Musical	Composing music or playing instruments
Kinesthetic (body)	Moving the body in sports or other physical activities
Interpersonal	Understanding others
Intrapersonal	Having insight into the self
Naturalistic	The ability to recognize animals, plants, and other living things

TABLE 7.4 Gardner's Eight Intelligences (sources: Gardner, H., & Hatch, T., 1989; Gardner & Moran, 2006)

LINK TO LEARNING

According to Gardner, there are several different types of intelligence. Take this short assessment about cognitive strengths (https://openstax.org/r/104CogStrengths) to give you some insight about your own.

Essentially, Gardner believed individuals could excel in one or more of these areas but not necessarily all. For example, the star basketball player in school may have excellent kinesthetic intelligence, whereas the soloist in the school orchestra demonstrates outstanding musical intelligence. Gardner also argued that traditional tests of intelligence measure only linguistic, logical-mathematical, and spatial ability, and that the other five types of intelligence are less valued in school settings, although they can be valuable for career and personal development. Recent research in neuroscience supports the theory that unique neural patterns exist for each of the eight intelligences Gardner proposed (Shearer, 2018).

Although children clearly can demonstrate a specific strength in one or more areas, some critics have suggested that Gardner's intelligences are better described as talents, rather than separate types of intelligence (Visser et al., 2006). In addition, because there is substantial overlap between some areas such as mathematical and spatial intelligences, it may be misleading to consider them separate forms of intelligence (Visser et al., 2006). Another criticism regarding Gardner's theory is that the association of multiple intelligences with differences in brain function is a myth that has not been substantiated by research (Waterhouse, 2023). However, some research has indicated that specific neurological processes are associated with each type of intelligence (Shearer & Karanian, 2017). Despite these criticisms, educators find Gardner's theory to be a useful framework for viewing individual differences in student abilities.

Soon after Gardner proposed his theory, U.S. psychologist Robert Sternberg advocated for a **triarchic theory of**

intelligence (Sternberg, 1984) that consisted of three parts (Figure 7.13):

- Analytical skills: the ability to conduct academic problem-solving. A child with strong analytical skills may be particularly adept at identifying the protagonist and theme in a book they are reading or be able to evaluate and compare different theoretical perspectives in a science class.
- Creative skills: the ability to come up with novel ideas or solve problems in novel ways. A child with creative abilities may be able to build a structure in the woods using only items found in nature or creating a unique piece of art.
- Practical skills: the ability to adapt to different contexts and apply learning to daily life experiences. Practical intelligence has also been referred to as "street smarts." A child that has practical intelligence understands that if they see smoke coming from underneath a door, they should call 911, rather than open the door to investigate the source of the smoke. They also use their prior life experience to make good decisions in new experiences.

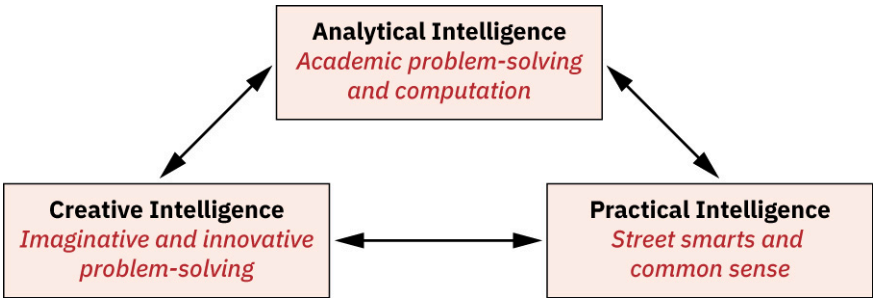


FIGURE 7.13 Sternberg's theory identifies three types of intelligence: practical, creative, and analytical. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Analytical intelligence is assessed by traditional intelligence tests. However, these tests do not measure creative and practical intelligence. Research showing that analytical intelligence is not associated with creativity supports the idea that these are distinct forms of intelligence (Furnham & Bachtiar, 2008). Both Gardner and Sternberg expanded the definition of intelligence to include additional skills they believed were important predictors of career and personal success. However, Sternberg focused primarily on cognitive skills that traditional testing methods often fail to assess, whereas Gardner's theory is designed to identify intellectual strengths that exist outside of typical school curricula.

The concept of multiple intelligence has made a notable impact on educators, who have used these ideas to support students' learning needs. Many teachers recognize that their pupils demonstrate meaningful differences in cognitive abilities that may go unrecognized by traditional assessments, and that a multiple-intelligences approach can help personalize education for them (Chen et al., 2009; Shearer, 2018). Because traditional assessments of intelligence may underestimate cognitive abilities, a range of assessment strategies is beneficial for identifying the unique pattern of strengths across individual children.

Intelligence Testing

Human intelligence has been studied for more than 100 years. One of the first people to investigate it was Sir Francis Galton in the late 1800s. Galton attempted to use reaction time and physical characteristics to measure intelligence. Although he did not find that these physical characteristics captured human intelligence, he is considered one of the pioneers in human intelligence research. Alfred Binet's intelligence test introduced the idea of standardized assessments, tests that use the same questions for all and are administered and scored the same way every time. Later in the twentieth century, U.S. psychologists Lewis Terman and David Wechsler used the Binet test as the basis for their updated and expanded intelligence tests. Psychologists have continued to revise and improve these tests, including researching how they are influenced by culture and environment.

Modern Intelligence Tests

Modern intelligence tests calculate an **intelligence quotient (IQ)**, a score intended to quantify human intelligence. The way IQ scores are calculated has changed some over time though the average score of intelligence has stayed set at 100. Scoring generally involves comparing an individual's test score, sometimes called mental age, to the average scores of their chronological age group. The age at which a person is performing is their **mental age**; this is obtained from an intelligence test. For example, a five-year-old child who has the same abilities as most other five-year-olds would have an average IQ, an IQ of 100, while a ten-year-old child who can do what an average twelve-year-old is able to do would have a higher IQ, around 120.

IQ scores are calculated by measuring the deviation IQ, or the degree to which an individual deviates from what is average for that particular age. This entails finding the norms or expected scores for a specific population by having a large number of individuals of different ages complete the intelligence test. Through compiling population data, researchers can better capture the bell curve, or normal distribution, of data to understand where most people score. For each age group, the average score on the test is set to 100, with a standard deviation of 15 (Figure 7.14). Standard deviations describe how data points are distributed, or spread out, in a population. Seeing a person's score in comparison to a normal distribution can also help determine their unique learning needs and skills. For example, a score of 70 would be described as "two standard deviations below the mean," and an individual with that score may benefit from extra support in some academic settings. Similarly, someone with a score of 130 or above, two standard deviations above the mean, would benefit from specific enrichments or supports in academic settings as well. Finally, scores that fall within one standard deviation of the mean (between 85 and 115) are considered average, with 68 percent of the population having IQ scores in this range.

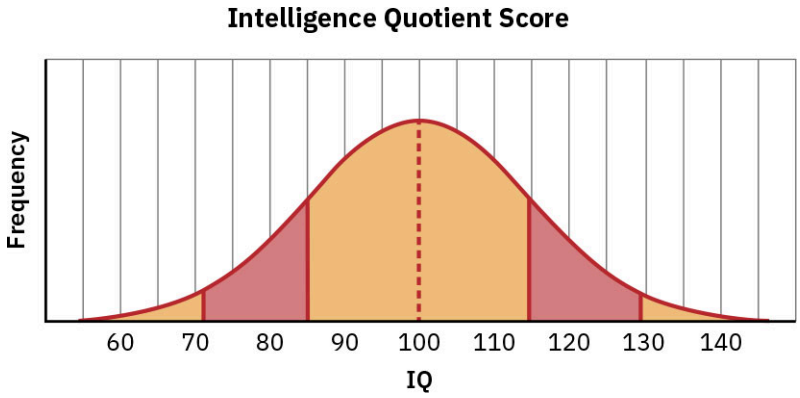


FIGURE 7.14 The average IQ is 100, with the majority of people having an IQ within one standard deviation of the average, i.e., between 85 and 115. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The intelligence tests most often used today are the Wechsler Scales and the Stanford-Binet, which assess a variety of cognitive abilities including memory, reasoning, arithmetic, general knowledge, and vocabulary. The Wechsler Scales include three tests based on the individual's age. Tasks might involve things like comprehension and logic questions, memory tasks, and tasks designed to measure visual and spatial skills. For example, a child might complete a block puzzle or design to assess their visual spatial skills.

A good intelligence test has both reliability, which means results are consistent over time, and validity, which means the test accurately measures what it says it is measuring. In other words, a good intelligence test should give the same score (or at least very close to it) if taken more than once, and it should measure intelligence rather than something else. However, the skills used to measure intelligence change with age. For example, questions considered difficult for a ten-year-old may not be challenging for a thirty-year-old, so norms are established for tests given to different age groups.

Intelligence tests are also regularly updated, because levels of intelligence may change over time in a population. In fact, the **Flynn effect** describes the significant rise in intelligence scores observed over the past

few decades (Flynn, 2012). Although the size of the increase varies from country to country, it has been about three points every ten years (Pietschnig & Voracek, 2015). Environmental factors such as parental education and family size seem to account for much of the Flynn effect (Bratsberg & Rogeberg, 2018). As children are exposed to new information and ideas, their thinking likely changes (te Nijenhuis, 2013). However, some evidence suggests it has reversed in several countries (Dutton et al., 2016).

Uses for Intelligence Tests

Intelligence tests have been used to make decisions about individuals in a variety of ways. For example, the United States military has used intelligence tests that include non-verbal reasoning questions to assess differences in intelligence among adults, regardless of whether they were literate (Richelson, 2018). Intelligence tests have also been used to make decisions about whether inmates are eligible for the death penalty (for example, in *Hall v Florida, 2024*), and to predict academic performance in children (Blume et al., 2009). Children with higher IQs also tend to have higher grades in school (Lozano-Basco et al., 2022). Thus, IQ tests are sometimes used to make decisions about school and college admissions, as well as employment opportunities (Ganuthula & Sinha, 2019).

Educators have also used intelligence tests as one criterion used to diagnose learning and/or intellectual disabilities as well as to identify gifted children. For example, in addition to IQ tests, assessment of adaptive functioning, which refers to an individual's ability to complete daily living tasks, is also used to diagnose an intellectual disability (Tassé et al., 2016). Tests may also be useful in identifying areas of cognitive strength for a child as well as cognitive skills that may require extra support in an educational setting.

Cultural and Environmental Factors in Intelligence Testing

As discussed earlier, intelligence is influenced by a variety of environmental factors, including culture and SES. Intelligence tests have been criticized for many years for bias against racial and ethnic minorities, because marginalized and underrepresented groups tend to score lower than White and middle-class individuals. Intelligence changes with experience, which is impossible to assess well using an intelligence test. Since individuals from different cultural groups have different values and face different demands from their environments, the behaviors needed to successfully adapt to their environments can be quite different. For example, Aboriginal people in Australia rely more on visual skills on memory tasks, and approach spatial relationships differently than non-Aboriginal Australians (Rock & Price, 2019). (This study (Rock & Price, 2019) uses the terms "Aboriginal Australians" and "non-Aboriginal Australians.") Thus, what is needed to adapt to the environment and thus what is considered intelligent often differs across populations and cultures.

One solution has been to develop culture-free tests of intelligence intended to eliminate cultural bias completely. More recently, these tests have been referred to as culture-fair tests. To be truly culture-free or culture-fair, tests need to identify and assess universal skills that occur across cultures. Some versions of these culture-free tests also focus on assessments using nonverbal skills, such as determining the next pattern in a series of patterns (Raven, 2000). However, recent research suggests that even culture-free tests need to be adapted to the culture of the child to accurately assess cognitive performance (Lozano-Ruiz et al., 2021). Ultimately, counselors, teachers, and other professionals should focus more on the child being tested and less on the score. Since intelligence tests measure how a child has developed cognitively as a result of their life experiences, the tests may not fully capture the cognitive strengths of a child and should be considered only one piece of the puzzle.

Variations in Intelligence

The intellectual abilities of children vary considerably, and types of intellectual strengths may vary across children. Additionally, ranges include extremes in intellectual ability, such as intellectual disabilities and intellectual giftedness, that may impact academic achievement.

Intellectual Disability

Since IQ scores are normally distributed, few children will have extremely high or extremely low scores. In fact, about 2 percent of children will score below 70, which is often used as the part of the criteria for diagnosing intellectual disability. An **intellectual disability** typically is diagnosed when an individual has a very low IQ that creates limits in intellectual functioning and has challenges in adaptive behavior, or handling the tasks associated with daily life. Many children who have intellectual disabilities will need support throughout their lives, although some go on to live independently. Some common causes of intellectual disabilities include genetic conditions, pregnancy or birth complications, and exposure to diseases, toxins, or teratogens (Lee et al., 2023).

Individuals between the ages of three and twenty-one who are diagnosed with an intellectual disability, or other developmental or learning disability, qualify for special education services through their local school district. These services are individualized for each child's unique needs (Heward, 2018). In the United States as well as in some other countries like Canada, it is legally required that children with disabilities are placed in a least-restrictive environment. In the United States, the least-restrictive environment is mandated by the Individuals with Disabilities Act (IDEA), which states that children with disabilities have the right to a free and appropriate education (U.S. Department of Education). In some cases, this may include a separate environment, or a classroom that is designed to be as similar as possible to other classrooms. In other cases, children with disabilities will be integrated into mainstream academic classrooms. This approach to education is called inclusion. Children with disabilities in a mainstream classroom may also have a teacher or teacher's assistant who works directly with that child (Mastropieri & Scruggs, 2007). Inclusive practices have been shown to be beneficial to children across multiple countries and resource levels, and is most impactful when supported by effective teacher training, accessible facilities, and inclusion of individual and small group instruction (Mendoza & Heymann, 2024).

LINK TO LEARNING

We can do a lot to help children with intellectual disabilities reach their full potential. Watch this video that provides a powerful example of how the expectations of parents and teachers can impact these children (https://openstax.org/r/104PrntExpectns) to learn more.

Giftedness

Approximately 2 percent of children will score above an IQ of 130, often considered one of the markers for **giftedness** or accelerated learning, although there is no universally accepted definition (National Association for Gifted Children, 2018). Intellectually gifted children may have significant strengths in cognitive flexibility and specific ability areas, such as music or geography, in addition to advanced cognitive performance (Castejón et al., 2016). Gifted children often go on to achieve a high level of professional success (Schleger, 2022).

Although gifted children learn easily, they still need support from schools to achieve their potential and stay curious, engaged learners. In elementary school, teaching gifted children may involve providing opportunities for children to cover the same curriculum as other children but in greater depth (Olszewski-Kubilius & Thomson, 2015). As they get older, gifted children are typically placed in accelerated classes that move through the curriculum more quickly than standard classes. They may remain in their current grade but take some classes with older students or they may skip an entire grade. Despite concerns that gifted children who move through school more quickly will struggle emotionally or socially, most research has not found any negative social or emotional outcomes (Jolly & Matthews, 2012). In fact, most gifted children are happiest when they are with older peers at the same cognitive level than when they are with children of the same age (Neihart, 2021).

Educators, caregivers, and psychologists also discuss and sometimes debate the terminology itself. They

propose alternative names for students with high IQ or similar test outcomes, including "high-ability," "high aptitude," "accelerated learner," and so on. There is no consensus that the term itself causes distress or concern among either students termed gifted or other students in their schools and communities.

LINK TO LEARNING

Although many schools use intellectual ability to identify children who are gifted, other programs focus on identifying unique talents in individuals. Read about how programs identify these talents and challenge (https://openstax.org/r/104GiftedGirls) gifted girls.

References

Bartels, M., Rietveld, M. J. H., Van Baal, G.C.M., & Boomsma, D. (2022). Genetic and environmental influences on the development of intelligence. *Behavior Genetics, 32(4),* 237–249. https://doi.org/10.1023/A:1019772628912

Blume, J. H., Johnson, S. L., & Seeds, C. (2009). Of Atkins and Men: Deviations from Clinical Definitions of Mental Retardation in Death Penalty Cases. *Cornell Law Faculty Publications. 122*. https://scholarship.law.cornell.edu/lsrp_papers/122/

Bratsberg, B., & Rogeberg, O. (2018). Flynn effect and its reversal are both environmentally caused. *Proceedings of the National Academy of Sciences of the United States of America, 115*(26), 6674–6678. https://doi.org/10.1073/pnas.1718793115

Castejón, J. L., Gilar, R., Miñano, P., & González, M. (2016). Latent class cluster analysis in exploring different profiles of gifted and talented students. *Learning and Individual Differences, 50,* 166–174. https://doi.org/10.1016/j.lindif.2016.08.003

Chen J.Q., Moran S., & Gardner H. *Multiple intelligences around the world*. John Wiley & Sons; Hoboken, NJ, USA: 2009.

Deary, I.J., Cox, S.R. & Hill, W.D. (2022). Genetic variation, brain, and intelligence differences. *Molecular Psychiatry 27*, 335–353. https://doi.org/10.1038/s41380-021-01027-y

Dunkel, C. S., van der Linden, D., & Kawamoto, T. (2023). Maternal supportiveness is predictive of childhood general intelligence. *Intelligence, 98*, Article 101754. https://doi.org/10.1016/j.intell.2023.101754

Dutton, E., van der Linden, D. & Lynn, R. (2016). The negative Flynn Effect: A systematic literature review. Intelligence, 59, 163–169. https://doi.org/10.1016/j.intell.2016.10.002

Elansary, M., Pierce, L., Wei, W. S., McCoy, D. C., Zuckerman, B., & Nelson, C. (2021). Maternal stress and early neurodevelopment: Exploring the protective role of maternal growth mindset, *Journal of Development and Behavioral Pediatrics.* https://doi.org/10.1097/dbp.0000000000000998

Flynn JR (2012). *Are We Getting Smarter?: Rising IQ in the Twenty-First Century*. Cambridge, UK: Cambridge University Press.

Furnham, A., & Bachtiar, V. (2008). Personality and intelligence as predictors of creativity. *Personality and Individual Differences, 45*, 613–617. https://doi.org/10.1016/j.paid.2008.06.023

Ganuthula, V. R. R., & Sinha, S. (2019). Through the looking glass: The role of motivation, Cognitive functioning, and affect on IQ tests. Frontiers in Psychology, 10, 2857. https://doi.org/10.3389/fpsyg.2019.02857

Gardner, H., & Hatch, T. (1989). Educational implications of the theory of multiple intelligences. *Educational Researcher*, *18*(8), 4–10. https://doi.org/10.3102/0013189X0180080

Gardner, H., & Moran, S. (2006). The science of multiple intelligences theory: A response to Lynn Waterhouse. *Educational Psychologist*, *41*(4), 227–232. http://dx.doi.org/10.1207/s15326985ep4104_2

Hall v. Florida. *SCOTUSblog*. Retrieved March 1, 2024. https://www.scotusblog.com/case-files/cases/freddie-lee-hall-v-florida/

Heward, W. L. (2018). Use strategies to promote active student engagement. In *High Leverage practices for Inclusive classrooms* (pp. 251–263). Routledge.

Jolly J.L., & Matthews M.S. (2012). A critique of the literature on parenting gifted learners. *Journal for the Education of the Gifted, 35*, 259–290. https://doi.org/10.1177/0162353212451703

Lee K, Cascella M, Marwaha R. Intellectual Disability. [Updated 2023 Jun 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK547654/

Lozano-Blasco, R., Quílez-Robres, A., Usán, P., Salavera, C., & Casanovas-López, R. (2022). Types of intelligence and academic performance: A systematic review and meta–analysis. *Journal of Intelligence, 10*(4), 123. https://doi.org/10.3390/jintelligence10040123

Lozano-Ruiz, Alvaro & Fasfous, Ahmed & Ibanez-Casas, Inmaculada & Cruz-Quintana, Francisco & Perez-Garcia, Miguel & Pérez-Marfil, María Nieves. (2021). Cultural bias in intelligence assessment using a culture–free test in Moroccan children. *Archives of Clinical Neuropsychology, 10,*1093/arclin/acab005.*36, 1502–1510.* https://doi.org/10.1093/arclin/acab005

Mastropieri, M. A., & Scruggs, T. E. (2007). *The inclusive classroom: Strategies for effective instruction.* Pearson.

McFarland, M.J., Hauer, M.E., & Rueben, A. (2022). Half of the US population exposed to adverse lead levels in early childhood. *PNAS, 119(11),* Article e2118631119. https://doi.org/10.1073/pnas.2118631119

Mendoza, M., & Heymann, J. (2024). Implementation of inclusive education: A systematic review of studies of inclusive education interventions in low- and lower-middle-income countries. *International Journal of Disability, Development and Education, 71*(3), 299–316. https://doi.org/10.1080/1034912X.2022.2095359

National Association for Gifted Children (2018). Key considerations in identifying and supporting gifted and talented learners: A report from the 2108 NACG Definition Task Force.

Neihart, M. (2021). *The social and emotional development of gifted children: What do we know?* Routledge.

Olszewski-Kubilius, P., & Thomson, D. (2015). Talent development as a framework for gifted education. *Gifted Child Today*, *38*(1), 49–59. https://doi.org/10.1177/1076217514556531

Olszewski-Kubilius, P., Subotnik, R. F., & Worrell, F. C. (2015). Conceptualizations of giftedness and the development of talent: Implications for counselors. *Journal of Counseling & Development, 93*(2), 143–152. https://doi.org/10.1002/j.1556-6676.2015.00190.x

Pietschnig, J., & Voracek, M. (2015). One century of global IQ gains: A formal meta-analysis of the Flynn effect (1909-2013) *Perspectives on Psychological Science, 10,* 282–306

Raven J. (2000). The Raven's progressive matrices: Change and stability over culture and time. *Cognitive Psychology*, *41*(1), 1–48. https://doi.org/10.1006/cogp.1999.0735

Richelson, J. T. (2018). *The US Intelligence Community*. Routledge.

Roberts, M., Tolar-Peterson, T., Reynolds, A., Wall, C., Reeder, N., & Rico Mendez, G. (2022). The effects of nutritional interventions on the cognitive development of preschool–age children: A systematic review. *Nutrients*, *14*(3), Article 532. https://doi.org/10.3390/nu14030532

Rock, D., & Price, I.R. (2019). Identifying culturally acceptable cognitive tests for use in remote northern Australia. *BMC Psychology, 7,* Article 62. https://doi.org/10.1186/s40359-019-0335-7

Schlegler M. (2022). Systematic literature review: Professional situation of gifted adults. *Frontiers in Psychology*, *13*, Article 736487. https://doi.org/10.3389/fpsyg.2022.736487

Shearer B. (2018). Multiple intelligences in teaching and education: lessons learned from neuroscience. *Journal of Intelligence, 6*(3), Article 38. https://doi.org/10.3390/jintelligence6030038

Shearer, C. B., & Karanian, J. M. (2017). The neuroscience of intelligence: Empirical support for the theory of multiple intelligences?. *Trends in Neuroscience and Education*, *6*, 211–223. https://doi.org/10.1016/j.tine.2017.02.002

Sniekers, S., Stringer, S., Watanabe, K., Jansen, P. R., Coleman, J. R. I., Krapohl, E., Taskesen, E., Hammerschlag, A. R., Okbay, A., Zabaneh, D., Amin, N., Breen, G., Cesarini, D., Chabris, C. F., Iacono, W. G., Ikram, M. A., Johannesson, M., Koellinger, P., Lee, J. J., Magnusson, P. K. E., Posthuma, D. (2017). Genome-wide association meta-analysis of individuals identifies new loci and genes influencing human intelligence. *Nature Genetics*, *49*(7), 1107–1112. https://doi.org/10.1038/ng.3869

Song, Y., Barger, M. M., & Bub, K. L. (2022, January). The association between parents' growth mindset and children's persistence and academic skills. In Frontiers, *6* in Education (Vol. 6, p. 791652). Frontiers Media SA. https://doi.org/10.3389/feduc.2021.791652

Sternberg, R. J. (1984). Toward a triarchic theory of human intelligence. *Behavioral and Brain Sciences*, *7*(2), 269–287. https://doi.org/10.1017/S0140525X00044629

Sternberg, R. J. (2014). The development of adaptive competence: Why cultural psychology is necessary and not just nice. *Developmental Review, 34*(3), 208-224. https://doi.org/10.1016/j.dr.2014.05.004

Tassé, M. J., Luckasson, R., & Schalock, R. L. (2016). The relation between intellectual functioning and adaptive behavior in the diagnosis of intellectual disability.

Intellectual and Developmental Disabilities, *54*(6), 381–390. https://doi.org/10.1352/1934-9556-54.6.38
te Nijenhuis, J. (2013). The Flynn effect, group differences, and g loadings. *Personality and individual differences*, *55*(3), 224–228. https://doi.org/10.1016/j.paid.2011.12.023
Thurstone, L. L. (1946). Theories of intelligence. *The Scientific Monthly*, *62*(2), 101–112. https://www.jstor.org/stable/18854
U.S. Department of Education. (2024, February 16). *A history of the Individuals With Disabilities Education Act*. https://sites.ed.gov/idea/IDEA-History
Visser, B. A., Ashton, M. C., & Vernon, P. A. (2006). g and the measurement of multiple intelligences: A response to Gardner. *Intelligence, 34*(5), 507–510. https://doi.org/10.1016/j.intell.2006.04.006
von Stumm, S., & Plomin, R. (2015). Socioeconomic status and the growth of intelligence from infancy through adolescence. *Intelligence*, *48*, 30–36. https://doi.org/10.1016/j.intell.2014.10.002
Waterhouse, L. (2023). Why multiple intelligences theory is a neuromyth. Frontiers in Psychology, 14, 1217288. https://doi.org/10.3389/fpsyg.2023.1217288

7.4 Contexts: School and Learning Diversity in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Discuss the functions of schooling for child development
- Describe formal and informal school environments that support cognitive development
- Discuss diversity in learning needs, diagnoses, and resources

Tamika is starting in a new school. Her last school was very academic, and the teachers provided a highly structured curriculum, supporting students as they learned. Her new school encourages children to be much more creative and unrestricted in their learning, and the classroom is full of centers that allow active, hands-on experimentation for this purpose. Tamika's foster mother is excited about this new way of learning, but worries that it may be harder for Tamika to grasp all the important concepts she will need for the future.

Education is a key part of the daily lives of most children during middle childhood. The cognitive advancements you studied earlier in this chapter allow children to learn more efficiently and to think in more sophisticated ways. Throughout this time, children are becoming much more proficient in mathematics, reading, and writing. The educational experiences they have now are the foundation for their attitudes about formal learning and will affect their success in school up to and even beyond adolescence.

Schooling as a Context for Middle Childhood

In most countries, children spend a significant part of their daily lives in school, where they are taught the cognitive skills that will help them to be successful as adults. According to Robinson and Robinson (2022), schooling serves four important purposes for children: 1) to engage with their world, 2) to understand their culture and respect diversity, 3) to become economically independent and 4) to become productive citizens.

In many places, it is easy to take children's ability to go to school for granted and to assume that this opportunity has always been available. However, in most countries, attending school has only been possible for fewer than 200 years. In the United States, public education began during the colonial period in New England, where Puritans required children to learn reading, writing, and religion (Crooks, 2023). However, in other colonies, only a very small percentage of children attended school, and it was usually only boys and those from the wealthiest families. By the end of the 1800s, free compulsory education became widespread across the country, which meant that all children could receive a formal education, regardless of the social status of their family. Formal education now served to unify the country as well as to encourage immigrants to assimilate. Changes in job opportunities and city structures in the late 1800s to early 1900s, due to industrialization, also required individuals to have higher rates of literacy.

Although free mandatory education is available throughout the United States, this option is not universal around the globe. Across the world, approximately 16 percent of children do not attend school (UNESCO, 2023). In many parts of the world, girls have less access to education due to gender inequality, poverty, early marriage and/or gender-based violence (UNESCO, 2023). Although only 2 percent of countries explicitly restrict the rights of girls to attend school, only 33 percent of countries protect their rights to an education.

As well as providing critical academic achievements, schools offer a context for children to develop social competencies, as well as skills that will allow them to fully participate in society as they achieve adult independence. Formal schooling also provides necessary care for children during the day so that parents can work. In addition, because teachers are mandatory reporters and are often more familiar with typical

development than many parents, formal schooling provides a potential pathway for the early detection of developmental delays, child maltreatment, or other health risks that may negatively impact child development and academic success.

School Environments and Influences

During middle childhood, learning can take place through formal education provided by teachers and other specially trained professionals. Important learning also happens through informal education, which can take place anywhere, including at home. Informal settings may be particularly useful for combatting disparities in education. For example, participation in STEM (science, technology, engineering and mathematics) programs in informal settings, such as museums, science centers, zoos, and aquariums, are associated with less stereotypical beliefs about gender and STEM engagement, likely because children are exposed to educators and professionals that do not fit the typical gender stereotypes (McGuire et al., 2020).

Theoretical Approaches to Education

Theories of education can influence the way teachers approach education in their classrooms. Two such theories are behaviorism and constructivism. Behaviorism, as an educational philosophy, focuses on the idea that student behavior can be influenced by the classroom environment. A teacher provides a stimulus to which the student responds, and the teacher positively reinforces the desired response or punishes an undesired response.

Ultimately, the teacher is using behavioral techniques to achieve results, like effective learning. Positive reinforcement is a consequence for behavior that increases the likelihood the behavior will be repeated. Some examples include praising a child for providing a correct response, giving extra recess time for completed homework, and hanging exemplary work in the classroom. Similarly, teachers may use punishments for undesirable behaviors that are designed to decrease the likelihood that a behavior will be repeated. Some examples are: sending a misbehaving student to the principal's office, giving a student detention for failing to complete homework, or calling parents to report misbehavior in the classroom.

Given the many benefits of positive reinforcement for changing behaviors, best practices for schools focus on positive reinforcement for managing student behavior (Wilkins et al., 2023). However, relying solely on rewards and punishments to control student behavior may lead to learning just for the rewards (extrinsic motivation), rather than learning for the sake of learning (intrinsic motivation) (Ryan & Deci, 2020). Since intrinsic motivation is associated with better academic achievement (Burton et al., 2006), educators should balance the use of behaviorist techniques with opportunities for students to learn through engaging assignments designed to address relevant real-world problems, to allow students to choose what they learn, or to demonstrate their learning through portfolios (Mathewson, 2019).

Jean Piaget proposed the idea of **constructivism**, which suggests that students play an active role in acquiring knowledge by constructing it through experience, rather than just passively receiving information. Lev Vygotsky's sociocultural theory of cognitive development offered another view, arguing that cognitive development happens through the social interactions that occur when adults or more capable peers guide children's learning in the zone of proximal development (Miller, 2011). The zone of proximal development consists of the knowledge or skills the student doesn't yet have but can achieve with the help of someone else. The teaching method that helps students learn in this model is referred to as scaffolding, which is when students receive support from more capable individuals to acquire new knowledge or develop new skills (Figure 7.15).

FIGURE 7.15 Children can learn new skills through scaffolding, such as learning to use tools with the assistance of a more capable adult. (credit: "Worker and child" by Intermountain Forest Service, USDA Region 4/Flickr, Public Domain)

In a classroom setting, constructivism becomes a teaching strategy in which teachers guide children to think for themselves and encourage collaboration for problem-solving. The teacher becomes a facilitator who guides learning, rather than an individual who provides direct instruction.

Formal Schooling

In the United States, formal schooling typically begins around age five or six when a child enters kindergarten, although the age at which schooling is required varies by state. Some researchers have argued that seven is the most appropriate age for beginning formal schooling (Whitebread & Bingham, 2013). In fact, that is when many children start formal schooling in other countries, including Afghanistan, Indonesia, and Niger. In contrast, other countries, including Trinidad and Tobago, New Zealand, Pakistan, and Sri Lanka, have children start their primary education when they are as young as five (The World Bank, 2023). Seven is also the age at which Piaget proposed that children enter the concrete operational stage and become capable of using logic and solving concrete problems. Regardless of the age at which formal schooling begins, middle childhood is synonymous with school-age and is a period of critical learning.

Formal schooling provides education in a systematic and organized manner. It focuses on achieving specific learning goals with the aid of a trained educator and a formal learning environment. The methods and classroom settings can vary from highly structured to more student-driven but still teacher-guided (Figure 7.16).

FIGURE 7.16 Classroom settings can vary a great deal, but are a common learning environment for children to acquire new skills, engage with peers, and receive instructional support. (credit: "second grade writing class" by "woodleywonderworks"/Flickr, CC BY 2.0)

Classrooms that are characterized by direct instruction from a teacher are teacher-centered classrooms (Heal, 2023). Teachers are the focus and have full control over what happens in the classroom. Students take a more passive role and learn through drills, quizzing, and presentations. Although this method ensures that students will be exposed to all relevant topics, it may be less engaging for some and does not encourage children to direct their own learning. It also does not encourage collaboration or critical thinking.

Student-centered classrooms, on the other hand, are characterized by equal interactions between students and teachers (Heal, 2023). This teaching method leans heavily on ideas by Piaget and Vygotsky; it encourages children to actively construct their own learning by engaging in problem-solving activities and collaborative learning with peers (Khadidja, 2020). Montessori and Waldorf models of education are built around the idea of student-centered education (Attfield, 2022; Mavric, 2020). The teacher functions as a guide who encourages exploration and challenges children to think more deeply, reflecting on the process rather than on specific facts. Disadvantages of this method include the possibility of noisy or chaotic classrooms, difficulties with managing group work, and the risk that students may miss some important facts because instruction is not directly delivered to all.

In addition to the more formalized, official curriculum outlined in the lesson plans, the hidden curriculum is a set of unspoken, unofficial, and often unintended rules and values that students learn while attending school. The hidden curriculum, first described by Philip Jackson (1968), is seen in the way the school is organized, the way students are assigned to classes, and the schedules and physical characteristics of the school. For example, students who attend a school with a strict dress code receive an implicit message about the importance of conformity over individuality and self-expression (Friedrich & Shanks, 2023).

The hidden curriculum can influence students in both positive and negative ways (Halstead & Xiao, 2023). It often reinforces the values and expectations of society by teaching social skills and providing students with skills and knowledge they need to succeed in the real world, like effective time management and collaboration. For example, children may improve their patience and collaboration skills through taking turns during classroom activities. However, the hidden curriculum may also reinforce stereotypes or exert other negative

influences on children. For example, schools that have metal detectors may reinforce the idea that school is a dangerous place, and schools that have classrooms filled with signs about rules without interesting art or educational images may reinforce the idea that learning is never fun.

In 2001, the No Child Left Behind Act mandated that schools regularly administer achievement tests to measure knowledge and skills children have learned (Redding & Nguyen, 2020). No Child Left Behind was controversial for several reasons, and in 2015 it was replaced with the Every Student Succeeds Act; the new law is viewed as more flexible, but maintains significant requirements for testing and score reporting. The scores are published so parents, educators, and government officials can examine performance within schools as well as within demographics, such as social class and racial and ethnic groups. The goal of the tests is to increase student learning and academic achievement by holding educators accountable for student performance, and scores are often used to make decisions about how federal and/or state funding is distributed to schools. As a result of their serious consequences, these are often referred to as high-stakes tests (Eggen & Stobart, 2016).

High-stakes testing is very controversial (Bradbury et al., 2021). Supporters argue that these tests provide important information about student knowledge and skill acquisition, and that they encourage teachers to use more effective teaching strategies. However, critics claim that this type of testing is unfair to teachers and students in schools with inequitable resources and, as a result, there are significant socioeconomic and ethnic disparities in performance on these tests. Specifically, high-stakes tests harm more students of color and English-language learners (Solorzano, 2019). In addition, because the test results are so influential, schools are often criticized for "teaching to the test" and for putting too much focus on scores. The curriculum may then be less engaging for students and not allow for student-centered learning. Students and teachers often may feel punished for test scores, particularly when pressure to improve scores can be at the expense of recess and extracurricular classes such as music. Finally, teachers have less agency over what and how they teach because of the pressure to prepare students for these high-stakes tests and, as a result, report lower levels of motivation, which negatively impacts student performance and increases student stress (Acosta et al., 2020; Heissel et al., 2021). Schools may be able to reduce these negative impacts by providing mental health support and maintaining a positive learning environment that maintains extracurriculars such as the arts (Heissel et al., 2021; Ishiguro et al., 2023).

Informal Schooling

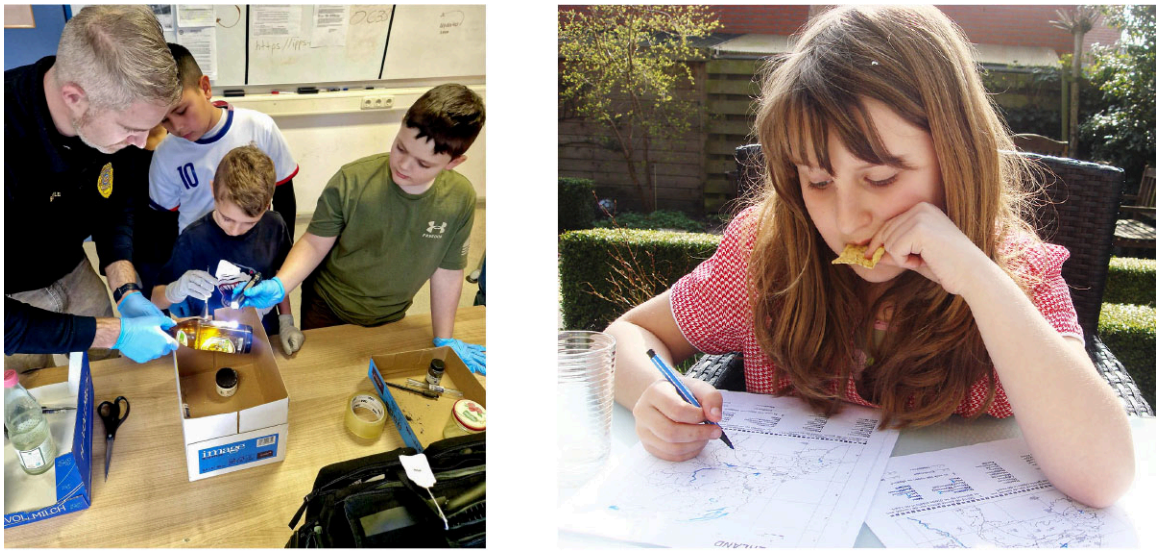
Informal schooling takes place outside the traditional classroom and includes extracurricular activities and any other learning that may take place in daily life. For example, parents regularly teach their children skills such as tying their shoes, completing chores around the house, and helping at mealtime. Peers are also a source of learning when children gain knowledge and discover new interests through interactions with friends and classmates.

Up until the 1970s, most children in the United States attended formal schooling environments. Since then, there has been an increasing number of students who have been homeschooled (Gaither, 2017). Homeschooling can take many different forms, but is generally any form of education that takes place outside of a traditional school environment (Carlson, 2020). Homeschools may be led by one adult or a group of them, may be structured and regulated or completely lacking in requirements, and may be done in peer groups or one-on-one. In the United States, there was a significant increase in homeschooling due to the COVID-19 pandemic. In 2019, approximately 3 to 4 percent of children were homeschooled and, by the 2021–2022 school year, about 6 percent of school-aged children were homeschooled (Ray, 2024). Homeschooling is also growing in many other countries, including Australia, Canada, France, Kenya, Russia, the Republic of Korea, and Thailand (Ray, 2024). However, homeschooling is much less common in other countries, such as Italy, Israel, Chile, and Turkey (Neuman, 2019), and is illegal in others, including Germany, Cuba, Brazil, and China (Barbosa, 2016; Sheng, 2018).

Families choose homeschooling for a variety of reasons. These include: the ability to customize the curriculum

and learning environment for individual children, including those with unique learning needs; the ability to protect minority children from racism and lowered expectations that schools may have for children of color; or the ability to focus on a particular set of values and beliefs (Fields-Smith, 2020). In fact, the most common reasons parents reported for homeschooling were concern over the school environment, being unhappy with previous academic instruction received at school, or wanting to provide specific religious or moral instruction to their children (McQuiggan et al., 2017). While a goal of homeschooling may be to support a child's unique learning needs, the lack of regulation and the lack of access to special education services may mean some children with disabilities receive less support in certain homeschool environments (Carlson, 2020).

There are both advantages and disadvantages to homeschooling. Homeschoolers may have less opportunity to engage in organized group activities, which may limit their ability to develop teamwork strategies and practice social skills (Sakarski, 2024). However, if children are involved in extracurricular activities and homeschooling cooperatives that give them opportunities to socialize with other children, they can effectively develop these social skills (Feraco et al., 2022). Children who were homeschooled often do as well as or better than children attending formal school on standardized academic achievement tests (Ray, 2017; 2024). Homeschooled adolescents describe advantages, like more choices in learning, greater confidence and imagination, and strong family support (Figure 7.17), as well as disadvantages, including lower test-taking and social skills, lower motivation, and fewer friendships (Neuman, 2020). Overall, the advantages and disadvantages of homeschooling can be quite difficult to determine due to the lack of regulation across various states and countries, the wide variability in quality, and the difficulty of researching homeschooled children who receive the least structured and regulated forms of homeschooling.



(a) (b)

FIGURE 7.17 One of the benefits of effective homeschooling is that children can (a) work in a variety of settings while they complete their work, (b) including outside. (credit a: modification of work "Visit to PMO" by USAG Ansbach/Flickr, Public Domain; credit b: modification of work "M does homework in april sun" by Jolante van Hemert/Flickr, CC BY 2.0)

LINK TO LEARNING

The homeschooling movement has grown significantly because of the COVID-19 pandemic. As a result, it is important to consider how homeschooling impacts the education of children. Read this article about homeschooling (https://openstax.org/r/104HomeSchoolng) to learn more.

Regardless of whether they are homeschooled or attend a traditional, formal school, many children spend time

participating in extracurricular activities. These structured activities are voluntary, and are supervised by adults (Mahoney et al., 2005). They include organized sports, arts programs for music or dance, gaming clubs, 4-H, and other community programs such as scouting, public library programs, or after-school programs. In 2020, 44 percent of boys and 35 percent of girls were on a sports team, while 37 percent of girls and 27 percent of boys took music, dance, or other types of lessons (Mayol-Garcia, 2022). Although participation in extracurricular activities has increased over the past two decades, significant disparities in participation by income status and neighborhood type exist. For example, children in poverty are less likely to participate in extracurriculars due to limited resources in parental time for transportation and financial limitations in paying for equipment or fees (Mayol-Garcia, 2022). Children living in more metropolitan areas are also more likely to engage in extracurricular sports (Johnson et al., 2023).

Participation in extracurricular activities has several positive benefits for children, including better mental health, higher academic performance, more positive social relationships, increased self-esteem, improved social skills, and fewer risky behaviors (Aumètre & Poulin, 2018; Oberle et al., 2019; Vandell et al., 2015). However, concerns have been raised about the potential negative effects on mental health, sleep, and social life of being involved in too many extracurricular activities (Caetano et al., 2023). As a result, caregivers should encourage their child(ren) to choose a couple of activities at a time and to make sure that they also have some unscheduled time.

LIFE HACKS

The Overscheduled Child?

In a world where there are so many options for extracurricular activities for children, is there such a thing as too much? Many children—whose parents have the financial means and schedule flexibility—can participate in multiple activities including organized sports teams, dance, gymnastics, martial arts, scouting, or music lessons, all of which may have social, physical, or cognitive benefits (O'ktamovna, 2024). However, research has suggested that too many extracurricular activities may not be beneficial and may even be harmful for children. For example, some researchers have coined the term "Hurried child syndrome," which refers to children who have overfilled schedules and who are pushed to be academically successful and to succeed in numerous extracurricular activities (Kashyap & Sharma, 2022). These children have more physical health problems, higher levels of stress, reduced creativity, and social isolation (Halemani, 2023).

In response, there is a growing movement to provide children with more downtime to relax. Unstructured time is associated with improved life skills and allows for quality family time (Walsh, 2017). Since there are benefits to participation in extracurricular activities as well as for unstructured leisure time, adults should strive to balance the opportunities to develop skills and passions through participation in extracurricular activities with some unstructured free time.

Influences on Academic Achievement

Regardless of school context (formal or informal), students are influenced by a variety of people and issues in their educational experience. For example, the Pygmalion effect is the impact of teacher expectations on student academic achievement (Rosenthal & Jacobson, 1968). These expectancies may come from experiences with individual students but are also based on teacher bias. For example, studies have shown that when teachers believe boys are better at math or girls are better at reading, children perform to these expectations, even when their actual abilities are not consistent with the teacher's beliefs (Plante et al., 2013; Retelsdorf et al., 2015). Such bias may explain, in part, why there are gender gaps in reading and math during middle childhood (Friedrich et al., 2015).

A recent report shows that girls outperform boys in reading (Global Education Monitoring Report Team, 2022). For example, in Saudi Arabia, 77 percent of girls but only 51 percent of boys reach a minimum proficiency in

reading. Although it is smaller, the gender gap for reading also favors girls in other countries such as the Dominican Republic, Lithuania, Morocco, Thailand, and Norway. On the other hand, boys perform better than girls in mathematics during middle childhood, though this gender gap disappears by adolescence (Global Education Monitoring Report Team, 2022). In other research, around half of countries studied had gender equity in math and science achievement (Mullis et al., 2020). Gender gaps in science and math are less likely to be present in more gender-equal societies (Global Educational Monitoring Report Team, 2022). However, boys continue to be overrepresented in careers requiring both math and science, suggesting that gender stereotypes and biases continue to influence the academic choices of children and extend into STEM careers and other career selections.

Student beliefs and motivations also influence academic achievement. Those with high **self-efficacy**, which Albert Bandura defined as confidence in their ability to solve a problem or complete a task, and who believe they can be successful, achieve more than students without self-efficacy (Musu-Gillette et al., 2015). Students who believe they can be successful in school tend to be more motivated in school. For example, students with high self-efficacy set higher goals for themselves to achieve, work harder, are more persistent in their pursuit of those goals and outperform peers with lower self-efficacy (Honicke et al., 2023). Similarly, both intrinsic and extrinsic motivations can promote better learning and academic achievement (Burton et al., 2006; Matthewson, 2019). For example, students are likely to learn more effectively when they enjoy what they are learning and may expect a reward, such as a good grade due to their efforts.

According to Carol Dweck's mindset theory, students with a growth mindset have more positive developmental outcomes than those with a fixed mindset, the belief that their abilities are fixed and can't be changed (Dweck et al., 2019). If ten-year-old Mario approaches a challenging assignment by saying, "This looks hard, but I think I can do it if I work hard," he is demonstrating a growth mindset. Having a growth mindset is associated with less anxiety and depression (Schleider & Weisz, 2016) as well as with improved grades and increased enrollment in more advanced courses in math (Yeager et al., 2019). However, the growth mindset is most effective if reinforced by teachers who endorse the learner's beliefs (Yeager et al., 2022). For example, if a student insists they are not good at math, a teacher may reinforce a fixed mindset by saying, "Maybe math isn't your strength, but you do other things well." However, the teacher may encourage a growth mindset by stating, "Let's keep working on this problem. I've seen you make great progress this year when you keep trying on a problem!"

LIFE HACKS

Develop a Growth Mindset

A growth mindset is the belief that our cognitive abilities can be changed, while a fixed mindset is the belief that those abilities are stable. Although the positive impacts of a growth mindset have been supported by research, findings are mixed about whether academic outcomes are higher for children with a growth mindset (Yeager & Dweck, 2020). Other research has shown that interventions designed to change students' mindsets do not influence student achievement (Macnamara & Burgoyne, 2023). One possible reason is that schools send mixed messages to children when they promote a growth mindset while at the same time focusing on performance outcomes. In addition, students likely come into the school year with a particular mindset as the result of past experiences with other teachers, their families, and peers.

Another criticism of growth mindset theory is that it underestimates the effects of innate abilities such as intelligence, and that it can make children feel like they are entirely responsible for their outcomes. In turn, that ignores the fact that many factors outside children's control, such as poverty and systemic racism, have a real impact on academic achievement (Alexander, 2015).

Despite these criticisms, having a growth mindset is more likely to promote positive outcomes than having a fixed mindset. So, what are some strategies that support developing a growth mindset? According to Carol Dweck

(2014), who first identified mindset theory, there are several steps that can help:

1. Praise wisely. In other words, praise should focus on effort and perseverance over intelligence or talent. For example, "you tried so hard" is preferable to "you must be so smart!"
2. Reward wisely. Rewards, such as good grades, should be based on effort and strategy instead of exclusively on correct answers.
3. Remember the word "yet." In other words, if there is a setback or failure, it isn't permanent, and a lot of learning can occur through mistakes and persistence.
4. Change mindsets by being willing to persevere at challenging and difficult tasks.

To learn more about Carol Dweck's research and tips, review this brief presentation on developing a growth mindset (https://openstax.org/r/104GrwthMindset) from Dweck.

Diversity in Learning

We can observe a wide range in children's ability to learn. Most schools are structured for neurotypical learners, so they need to give special consideration to students who are more advanced learners or who have learning disabilities.

Learning Disabilities

A condition that affects learning in a specific academic area such as reading, writing, math, or speech is called a **learning disability**. They are some of the most common disabilities diagnosed in children (American Psychiatric Association, 2022). To diagnose a learning disability, a child will be given a variety of assessments which may include an IQ test and a test of academic achievement. Learning disabilities are not due to an intellectual impairment or other physical or sensory disability and do not reflect the child's intelligence (Swanson, 2023). Thus, a child with a learning disability has a significant gap between their overall ability and their achievement in a specific cognitive area.

A common learning disability that results in difficulties in reading is known as **dyslexia** (Vaughn et al., 2024). Characteristics include poor spelling, and problems reading from left to right, and difficulties associating letters with sounds. Dyslexia is likely due to differences in the areas of the brain responsible for language and reading (Kershner, 2019). Dyslexia occurs in approximately 7 percent of children with rates varying by country (Yang et al., 2022). For example, Nigeria has a rate of 11 percent while Slovakia has a rate of 2 percent. These differences may be due, in part, to differences in writing systems across languages (Siok & Quin, 2022). Relatedly, **dysgraphia** is a learning disability in writing and often occurs with dyslexia (Chung et al., 2020). Children may have difficulties sounding out words, writing them phonetically, or forming letters with pen or pencil. They may write text that is poorly organized on the page or have trouble with spelling, grammar, and punctuation. These difficulties may persist into adulthood (McCloskey & Rapp, 2017). Approximately 10 to 30 percent of children have some difficulties with their writing. However, the actual prevalence of dysgraphia is dependent on how it is defined.

A child may be diagnosed with **dyscalculia**, a learning disability in math (Butterworth, 2005). Children may have difficulties learning basic math rules, using math symbols, understanding math problems, or understanding how numbers work. Rates of dyscalculia are similar to the rates of dyslexia (Monei & Pedro, 2017), although they may vary by country and geographical region (Keong et al., 2016). For example, rates of dyscalculia are higher in rural areas than in urban areas (Keong et al., 2016). Causes of dyscalculia include biological factors, differences in brain functioning, and specific cognitive deficits (Skagerlund & Traff, 2014). Fortunately, interventions have been shown to be effective in helping children who are having difficulty learning mathematics (Monei & Pedro, 2017).

Attention-Deficit/Hyperactivity Disorder (ADHD)

Neurodevelopmental disorders emerge during childhood as the nervous system develops. These disorders negatively impact a child's ability to function in one or more settings such as home and school. One of the more common neurodevelopmental disorders is **attention-deficit/hyperactivity disorder (ADHD)**, which is characterized by inattention, hyperactivity, impulsivity, and deficits in executive functions (Peterson et al., 2024). There are three ways it can present itself based on which symptoms are most problematic (Table 7.5) (Konst et al., 2014). This discussion of ADHD focuses on childhood diagnosis and experiences, but ADHD often persists into adulthood and may also be initially diagnosed in adults.

ADHD Presentation	Description
Predominately inattentive	Child has difficulty following instructions, paying attention to details, and organizing or finishing a task.
Predominately hyperactive-impulsive	Child displays excessive fidgeting and talking, difficulty sitting for longer period of times, and restlessness. Has trouble with impulsivity and difficulty waiting their turn or listening to instructions.
Combined presentation	Child has symptoms of both predominately inattentive and predominately hyperactive-impulsive forms.

TABLE 7.5 ADHD Presentations

A child with ADHD may struggle to attend to some tasks, like schoolwork, but may be hyper-attentive to other tasks that they find rewarding or interesting (like rock collecting or playing video games). Other symptoms of inattention include a failure to follow instructions, lack of attention to detail, and easily becoming distracted (Cai et al., 2023). Signs of hyperactivity in children with ADHD include excessive movement, fidgeting, squirming, difficulty remaining seated, and talkativeness (Ayano et al. 2023). They may also be more impulsive than other children. For example, they may shout out the answers to questions in class before they are called on or not consider the safety implications of running to grab a ball that rolled into the street.

Children with ADHD also often have deficits in executive functioning. For example, research has shown that impaired spatial working memory and inhibitory control among children with ADHD (Rastikerdar et al., 2023). Children with ADHD do not have any intellectual impairments when compared to children without ADHD, but they may struggle in school because of their difficulties with executive functioning. For example, they may not give themselves enough time to complete large projects, or they may forget to turn in completed homework. As a result, compared to children who do not have ADHD, children with ADHD may have lower grades in school, higher rates of grade retention and of dropping out of school (Iines et al., 2023).

ADHD occurs in approximately 5 percent of children between three and twelve years of age (Salari et al., 2023), a rate that has increased over the past several decades. It's likely that actual cases have not been rising, but that teachers, parents, and medical professionals are more aware of and more likely to recognize the symptoms and refer children for a diagnosis. Diagnostic techniques and screening processes have also improved, making it easier to diagnose a child (Abdelnour et al., 2022).

Boys are three times more likely than girls to be diagnosed with ADHD (Reuben & Elgaddal, 2024). Boys with ADHD are also more likely to display externalizing behaviors such as increased running and impulsivity, whereas girls are more likely to show internalizing behaviors such as low-self-esteem and inattentiveness. The externalizing behaviors are more likely to be disruptive at home or at school and may explain, in part, why boys are more likely to be diagnosed (Mowlem et al., 2019). However, if all children in a community are

screened, gender differences in the diagnosis of ADHD disappear (Assari, 2021) supporting the idea that higher rates of ADHD are due to more noticeable symptoms.

Globally, rates of ADHD vary from one country to another. For example, research has reported that approximately 8 percent of Turkish children have ADHD (Zorlu et al., 2020) while about 18 percent of children in Tunisia (Mhalla et al., 2018) and one-quarter of children in South Africa have ADHD (de Milander et al., 2020). There are also racial disparities in diagnosis. Rates of ADHD are higher in Black children than in White children; Hispanic children are less likely to receive a diagnosis of ADHD than White children (Shi et al., 2021). The reasons for these disparities are not completely understood, but some research has suggested that cultural values impact the likelihood that parents will seek a diagnostic evaluation for their children (Bradley, 2007) and that systemic racism may impact both the diagnosis and treatment of ADHD (Johnson et al., 2017).

There are several possible causes for ADHD including genetics, preterm birth and maternal use of substances like acetaminophen during pregnancy (Banaschewski et al., 2017; Ji et al., 2020; Kim et al., 2020; Sourander et al., 2019). More than seventy-six potential risk genes have been identified for ADHD (Demontis et al., 2023) and many of these are important for the regulation of the neurotransmitter dopamine. There is also research that has linked structures in the brain to ADHD. Most of these studies have focused on the frontal lobe and the prefrontal cortex, and suggest that the frontal lobe is less developed in individuals with this diagnosis (Hoogman et al., 2019). Since the frontal lobe is responsible for executive functions, attention, impulse control and planning, delays in frontal lobe development explain many of the behaviors seen in children with this disorder. Importantly, despite widely held beliefs, there is no evidence that sugar consumption is related to increased hyperactivity (Kramer, 2023) and, although, food additives have been shown to increase hyperactivity, the overall impact is very small (McCann et al., 2007).

Appropriate treatments, including medication and therapy, can significantly improve outcomes among individuals with ADHD (Arnold et al., 2015). One of the most frequent treatments is medication. In particular, the use of stimulants such as Ritalin, Vyvanse, and Adderall have been shown to increase dopamine activity and to have benefits for academic performance and reduced risk behaviors (Faraone et al., 2021; Storebø et al., 2023). Increasingly, medications for ADHD also involve the use of non-stimulant medications such as Straterra and Wellbutrin (Isaac et al., 2024). Although it may seem unusual to prescribe a stimulant to children with symptoms of hyperactivity, these medications activate the prefrontal cortex and frontal lobe. However, there is quite a bit of controversy about the use of medications to control symptoms. There are problematic side effects, which include disrupted sleep, decreased appetite, and headaches, as well as concerns that the use of stimulant medication can lead to people developing tolerance and/or withdrawal symptoms, leading to the need for progressively increased doses and potential overuse or misuse (Lovett et al., 2024). As a result, many parents may prefer to consider other treatment options. One of the most common treatments is cognitive behavioral therapy (CBT), a type of therapy that helps children change negative thought processes to more positive thought processes. Children with ADHD who have received CBT have better long-term outcomes than children treated with medication (Rajeh et al., 2017). Furthermore, the combination of CBT and medications has the most benefits, likely because the medication has an immediate effect that gives the child the focus to gain the most benefit from CBT (Li & Zhang, 2023).

Educational Services for Exceptional Learners

You may have heard the term **exceptional learner**, which is currently used to describe a child who has a variety of special needs (Hallahan et al., 2020). Starting in the 1970's, important federal laws were passed in the United States that have increased the rights of children with disabilities. In 1973, the Rehabilitation Act of 1973, Section 504 (PL 93-112) was passed. This law mandates that any individual with disabilities needs to be accommodated in any program that receives federal funding.

Since 1990, the Americans with Disabilities Act (ADA) has prohibited any kind of discrimination on the basis of a disability. This law extends its protections beyond organizations receiving federal funding to cover employment, and it also requires that accommodations be made in public facilities like restrooms and public

transportation. In school settings, this legislation led to accommodations like wheelchair-accessible doorways and restrooms (Figure 7.18).

(a)

(b)

FIGURE 7.18 Accommodations for learners may come in many forms including (a) accessible furniture in learning spaces and (b) instructional supports including teaching assistance and accessible digital tools. (credit a: modification of work "HDIPL-370" by Human Development Institute/Flickr, Public Domain; credit b: modification of work "USS Mesa Verde (LPD 19) 140417-N-HB951-071 (13980480769)" by U.S. Naval Forces Central Command, U.S. Fifth Fleet/Flickr, CC BY 2.0)

In the United States, the Individuals with Disabilities Education Act ensures that any child with a disability from birth to age 21 has access to free and appropriate education (United States Department of Education, 2024). The law also included specific provisions such as that education for a child with a disability should take place in the **least-restrictive environment**, meaning that wherever possible children should be included in general education with peers who do not have disabilities.

This law also requires public schools to provide an **individualized educational program (IEP)** to any child who receives special education and/or related services. An IEP is a written plan that spells out the specific educational goals and services that have been individualized for a student with a disability. The specific services vary based on the child's individual needs and might include physical therapy, speech/language therapy, occupational therapy, and counseling.

LINK TO LEARNING

Young people with ADHD learn to expect negative comments, even from some teachers. But teachers report they do not get enough training to properly support neurodivergent students. Watch Ebony Thompson make a personal and impassioned plea for more training in personalized learning (https://openstax.org/r/104PersnizdLrng) to learn more.

References

Abdelnour, E., Jansen, M. O., & Gold, J. A. (2022). ADHD diagnostic trends: Increased recognition or overdiagnosis?. *Missouri Medicine, 119*(5), 467–473. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9616454/

Acosta, S., Garza, T., Hsu, H. Y., Goodson, P., Padrón, Y., Goltz, H. H., & Johnston, A. (2020). The accountability culture: A systematic review of high-stakes testing and English learners in the United States during no child left behind. *Educational Psychology Review, 32*(2), 327–352. http://dx.doi.org/10.1007/s10648-019-09511-2

Alexander, S. (2015). No clarity around growth mindset. Slate Star Codex. https://slatestarcodex.com/2015/04/08/no-clarity-around-growth-mindset-yet/Retrieved from No Clarity Around Growth Mindset | Slate Star Codex on March 11, 2024.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Arnold, L. E., Hodgkins, P., Caci, H., Kahle, J., & Young, S. (2015). Effect of treatment modality on long-term outcomes in attention-deficit/hyperactivity disorder: a systematic review. *PLOS Oneone, 10*(2), Article e0116407. https://doi.org/10.1371/journal.pone.0116407

Assari, S. (2021). Emotional, behavioral, and cognitive correlates of attention deficit and hyperactive disorder (ADHD) screening and diagnosis history: sex/gender differences. *Journal of Neurology & Neuromedicine, 6*(1). https://doi.org/10.29245/2572.942x/2021/1.1278

Attfield, K. (2022). The young child's journey of 'the will': A synthesis of child-centered and inclusive principles in international Waldorf early childhood education. *Journal of Early Childhood Research, 20*(2), 159–171. https://doi.org/10.1177/1476718X211051184

Aumètre, F., & Poulin, F. (2018). Academic and behavioral outcomes associated with organized activity participation trajectories during childhood. *Journal of Applied Developmental Psychology, 54,* 33–41. https://doi.org/10.1016/j.appdev.2017.11.003

Ayano, G., Demelash, S., Gizachew, Y., Tsegay, L., & Alat, R. (2023). The global prevalence of attention deficit hyperactivity disorder in children and adolescents: An

umbrella review of meta-analyses. *Journal of Affective Disorders*, 339, 860–866. https://doi.org/10.1016/j.jad.2023.07.071
Banaschewski, T., Becker, K., Döpfner, M., Holtmann, M., Rösler, M., & Romanos, M. (2017). Attention-Deficit/Hyperactivity disorder. *Deutsches Arzteblatt International, 114*(9), 149–159. https://doi.org/10.3238/arztebl.2017.0149
Barbosa, L. M. R. (2016). An overview of the homeschooling in Brazil: Analysis of its principles and attempts of legislation. *Open Journal of Social Sciences*, 4(4), 203–2011. https://doi.org/10.4236/jss.2016.44029
Bradbury, A., Braun, A., & Quick, L. (2021). Intervention culture, grouping and triage: high-stakes tests and practices of division in English primary schools. *British Journal of Sociology of Education, 42*(2), 147-163. https://doi.org/10.1080/01425692.2021.1878873
Bradley, R. H. (2007). The struggle to assure equal treatment for all children with ADHD. *Journal of Developmental Behavioral Pediatrics, 28*(5), 404–405. https://doi.org/10.1097/DBP.0b013e3181559abe
Burton, K. D., Lydon, J. E., D'Alessandro, D. U., & Koestner, R. (2006). The differential effects of intrinsic and identified motivation on well-being and performance: Prospective, experimental, and implicit approaches to self-determination theory. *Journal of Personality and Social Psychology, 91*(4), 750–762. https://doi.org/10.1037/0022-3514.91.4.750
Butterworth, B. (2005). Developmental dyscalculia. In *The Handbook of Mathematical Cognition* (pp. 455–467). Psychology Press. https://psycnet.apa.org/record/2005-04876-026
Caetano, C., Caetano, G. & Nielsen, E. (2023). Are children spending too much time on enrichment activities? *Economics of Education Review, 98*, 102503. https://doi.org/10.1016/j.econedurev.2023.102503
Cai, W., Warren, S. L., Duberg, K., Yu, A., Hinshaw, S. P., & Menon, V. (2023). Both reactive and proactive control are deficient in children with ADHD and predictive of clinical symptoms. *Translational Psychiatry*, *13*(1), 179. https://doi.org/10.1038/s41398-023-02471-w
Carlson, J. F. (2020). Context and regulation of homeschooling: Issues, evidence, and assessment practices. *School Psychology*, *35*(1), 10. https://psycnet.apa.org/fulltext/2020-00472-001.pdf
Chung, P. J., Patel, D. R., & Nizami, I. (2020). Disorder of written expression and dysgraphia: definition, diagnosis, and management. *Translational Pediatrics*, *9*(Suppl 1), S46. https://doi.org/10.21037/tp.2019.11.01
Crooks, M. (2023). April 23, 1635 CE: First public school in America. Retrieved from First Public School in America (nationalgeographic.org) on March 4, 2024.*National Geographic.* https://education.nationalgeographic.org/resource/first-public-school-america/
De Milander, M., Schall, R., De Bruin, E., & Smuts-Craft, M. (2020). Prevalence of ADHD symptoms and their association with learning-related skills in grade 1 children in South Africa. *South African Journal of Education, 40*(3), 1–7. http://dx.doi.org/10.15700/saje.v40n3a1732
Demontis, D., Walters, G.B., Athanasiadis, G. *et al.* (2023). Genome-wide analyses of ADHD identify 27 risk loci, refine the genetic architecture and implicate several cognitive domains. *Nature Genetics, 55*, 198–208 https://doi.org/10.1038/s41588-022-01285-8
Dweck, C. S. (2014). Developing a growth mindset with Carol Dweck. https://www.youtube.com/watch?v=hiiEeMN7vbQ&t=319s
Dweck, C.S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological Science, 14*, 481–496. https://doi.org/10.1177/1745691618804166
Eggen, T. J. H. M., & Stobart, G. (2016). *High-Stakes Testing in Education: Value, fairness and consequences*. Routledge.
Faraone, S. V., Banaschewski, T., Coghill, D., Zheng, Y., Biederman, J., Bellgrove, M. A., Newcorn, J. H., Gignac, M., Saud, N. M. A., Manor, I., Rohde, L. A., Yang, L., Cortese, S., Almagor, D., Stein, M. A., Albatti, T. H., Aljoudi, H. F., Alqahtani, M. M. J., Asherson, P., Atwoli, L., Bölte, S., Buitelaar, J. K., Crunelle, C. L., Daley, D., Dalsgaard, S., Döepfner, M., Espinet, S., Fitzgerald, M., Franke, B., Haavik, J., Hartman, C. A., Hartung, C. M., Hinshaw, S. P., Hoekstra, P. J., Hollis, C., Kollins, S. H., Kooij, J. J. S., Kuntsi, J., Larsson, H., Li, T., Liu, J., Merzon, E., Mattingly, G., Mattos, P., McCarthy, S., Mikami, A. Y., Molina, B. S. G., Nigg, J. T., Purper-Ouakil, D., Omigbodun, O. O., Polanczyk, G. V., Pollak, Y., Poulton, A. S., Rajkumar, R. P., Reding, A., Reif, A., Rubia, K., Rucklidge, J., Romanos, M., RamosQuiroga, J. A., Schellekens, A., Scheres, A., 20 S. V. Faraone and N. V. Radonjic´ Schoeman, R., Schweitzer, J. B., Shah, H., Solanto, M. V., Sonuga-Barke, E., Soutullo, C., Steinhausen, H.-C., Swanson, J. M., Thapar, A., Tripp, G., Glind, G. v. d., Brink, W. v. d., Oord, S. V. d., Venter, A., Vitiello, B., Walitza, S., & Wang, Y. (2021). The world federation of ADHD international consensus statement: 208 evidence–based conclusions about the disorder. *Neuroscience and Biobehavioral Reviews, 128*, 789–818. https://doi.org/10.1016/j.neubiorev.2021.01.022
Feraco, T., Resnati, D., Fregonese, D., Spoto, A. & Meneghetti, C. (2022). An integrated model of school students' academic achievement and life satisfaction. Linking soft skills, extracurricular activities, self-regulated learning, motivation, and emotions. *European Journal of Psychology of Education, 38*(4). https://doi.org/10.1007/s10212-022-00601-4
Fields-Smith, C. (2020). Exploring single black mother's resistance through homeschooling. Switzerland: Palgrave Macmillan Cham.
Friedrich, A., Flunger, B., Nagengast, B., Jonkmann, K., & Trautwein, U. (2015). Pygmalion effects in the classroom: Teacher expectancy effects on students' math achievement, *Contemporary Educational Psychology, 41*, 1–12, https://doi.org/10.1016/j.cedpsych.2014.10.006
Friedrich, J., & Shanks, R. (2023). 'The prison of the body': school uniforms between discipline and governmentality. *Discourse: Studies in the Cultural Politics of Education*, *44*(1), 16–29. https://doi.org/10.1080/01596306.2021.1931813
Gaither, M. (2017). The Homeschooling Movement and the Return of Domestic Education, 1998–2016. *Palgrave Macmillan, New York*. pp. 241–305 https://doi.org/10.1057/978-1-349-95056-0_8
Global Education Monitoring Report Team (2022). Global education monitoring report 2022: Gender report, deepening the debate on those still left behind. *UNESCO Digital Library*. https://doi.org/10.54676/RCZB6329
Halemani, M. K. (2023). Hurried child syndrome: Causes, consequences, and interventions. *Saudi Journal of Nursing and Health Care*, *6*(11), 445–446. https://saudijournals.com/media/articles/SJNHC_611_445-446.pdf
Hallahan, D. P., Pullen, P. C., Kauffman, J. M., & Badar, J. (2020). Exceptional learners. In Oxford Research Encyclopedia. https://doi.org/10.1093/acrefore/9780190264093.013.926
Halstead, J.M., & Xiao, J. (2023). The Secret Workings of the Hidden Curriculum. In: Lovat, T., Toomey, R., Clement, N., Dally, K. (Eeds) Second International Research Handbook on Values Education and Student Wellbeing. Springer International Handbooks of Education. Springer, Cham. https://doi.org/10.1007/978-3-031-24420-9_19
Heal, J. (2023). Balancing teacher-led instruction and student-centered learning. Edutopia. Retrieved at Balancing Teacher-Led Instruction and Student-Centered Learning | Edutopiahttps://www.edutopia.org/article/teacher-led-instruction-student-centered-learning/ on March 4, 2024.
Heissel, J. A., Adam, E. K., Doleac, J. L., Figlio, D. N., & Meer, J. (2021). Testing, stress, and performance: How students respond physiologically to high-stakes testing. *Institute for Policy Research,* wp. 18–31. https://www.ipr.northwestern.edu/our-work/working-papers/2018/wp-18-31.html
Honicke, T., Broadbent, J., & Fuller-Tyszkiewicz, M. (2023). The self-efficacy and academic performance reciprocal relationship: the influence of task difficulty and baseline achievement on learner trajectory. *Higher Education Research & Development*, *42*(8), 1936–1953. https://doi.org/10.1080/07294360.2023.2197194
Hoogman, M., Muetzel, R., Guimaraes, J. P., Shumskaya, E., Mennes, M., Zwiers, M. P., Jahanshad, N., Sudre, G., Wolfers, T., Earl, E. A., Soliva Vila, J. C., Vives-Gilabert, Y., Khadka, S., Novotny, S. E., Hartman, C. A., Heslenfeld, D. J., Schweren, L. J. S., Ambrosino, S., Oranje, B., de Zeeuw, P., Franke, B. (2019). Brain imaging of the cortex in ADHD: A coordinated analysis of large-scale clinical and population–based samples. *The American Journal of Psychiatry*, *176*(7), 531–542. https://doi.org/10.1176/appi.ajp.2019.18091033
Iines, R, P., Sami, J. M., Vesa, M. N., & Hannu, K. S. (2023). ADHD symptoms and maladaptive achievement strategies: the reciprocal prediction of academic performance beyond the transition to middle school. *Emotional and Behavioural Difficulties*, *28*(1), 3–17. https://doi.org/10.1080/13632752.2023.2189404
Isaac, V., Lopez, V., & Escobar, M. J. (2024). Arousal dysregulation and executive dysfunction in attention deficit hyperactivity disorder (ADHD). *Frontiers in Psychiatry*, *14*, 1336040. https://doi.org/10.3389/fpsyt.2023.1336040
Ishiguro, C., Ishihara, T., & Morita, N. (2023). Extracurricular music and visual arts activities are related to academic performance improvement in school-aged children. *npj Science of Learning*, *8*(1), Article 7. https://doi.org/10.1038/s41539-023-00155-0
Jackson, P. (1968). *Life in Classrooms*. Rinehart and Winston: New York.
Ji, Y, Azuine, R.E., Zhang, Y., Hou, W., Hong, X., Wang, G., Riley, A., Pearson, C., Zuckerman, B. & Wang, X. (2020). Association of cord plasma biomarkers of in utero acetaminophen exposure with risk of attention deficit/hyperactivity disorder and autism spectrum disorder in childhood. *JAMA Psychiatry*, 77(2), 180–189. https://doi.org/10.1001/jamapsychiatry.2019.3259
Johnson T. J., Ellison A. M., Dalembert G., Fowler, J., Dhingra, M., Shaw, K., & Ibrahim, S. Implicit bias in pediatric academic medicine. *Journal of National Medical Association*. 2017; 109(3): 156–163. https://doi.org/10.1016/j.jnma.2017.03.003
Johnson, A. M., Bocarro, J. N., & Saelens, B. E. (2023). Youth sport participation by metropolitan status: 2018-2019 National Survey of Children's Health (NSCH). *Research Quarterly for Exercise and Sport*, *94*(4), 895-904. https://doi.org/10.1080/02701367.2022.2069662
Kashyap, V., & Sharma, S. K. (2022). Hurried child syndrome among children and adolescents: A pilot study to calculate sample size. *The International Journal of Indian Psychology*, *10*(2), 410–415. https://ijip.in/articles/hurried-child-syndrome-among-children-and-adolescents-a-pilot-study-to-calculate-sample-size/
Keong, W. K., Pang, V., Eng, C. K., & Keong, T. C. (2016). Prevalence rate of dyscalculia according to gender and school location in Sabah, Malaysia. In 7th International Conference on University Learning and Teaching (InCULT 2014) Proceedings: Educate to Innovate (pp. 91–100). Springer Singapore. https://doi.org/10.1007/978-981-287-664-5_8
Kershner, J. R. (2019). Neurobiological systems in dyslexia. *Trends in Neuroscience and Education, 14*, 11–24. https://doi.org/10.1016/j.tine.2018.12.001
Khadidja, K. (2020). Constructivist theories of Piaget and Vygotsky: Implications for pedagogical practices. *University of Mentouri Brothers-Constantine 1*. https://www.researchgate.net/publication/347906906_Constructivist_Theories_of_Piaget_and_Vygotsky_implications_for_Pedagogical_Practices
Kim, J.H., Kim, J.Y., Lee, J., Jeong, G.H., Lee, E., Lee, S., et al. (2020). Environmental risk factors, protective factors, and peripheral biomarkers for ADHD: an umbrella review. *The Lancet Psychiatry, 7(11),*955-70. https://doi.org/10.1016/S2215-0366(20)30312-6
Konst, M. J., Matson, J. L., Goldin, R., & Rieske, R. (2014). How does ASD symptomology correlate with ADHD presentations. *Research in Developmental Disabilities*,

35(9), 2252–2259. https://doi.org/10.1016/j.ridd.2014.05.017
Kramer, M.S. (2023). The "Hype" About Sugar and Children's Behavior. In: Believe It or Not. pp. 143–149. Springer, Cham. https://doi.org/10.1007/978-3-031-46022-7_15
Li, Y. & Zhang, L. (2023). Efficacy of cognitive behavioral therapy combined with pharmacotherapy versus pharmacotherapy alone in adult ADHD: A systematic review and meta-analysis. *Journal of Attention Disorders, 28(3).* https://doi.org/10.1177/1087054723121496
Lovett, B. J., Nelson, J. M., & Jordan, A. H. (2024). Should patients be evaluated for ADHD while using ADHD medication? *Professional Psychology: Research and Practice,*. Advance online publication55(2), 10_168. https://doi.org/10.1037/pro0000555
Macnamara, B. N., & Burgoyne, A. P. (2023). Do growth mindset interventions impact students' academic achievement? A systematic review and meta-analysis with recommendations for best practices. *Psychological Bulletin, 149*(3–4), 133–173. https://doi.org/10.1037/bul0000352
Mahoney, J. L., Lord, H., & Carryl, E. (2005). An ecological analysis of after-school program participation and the development of academic performance and motivational attributes for disadvantaged children. *Society for Research in* Child Development, 76(4), 811–825. https://doi.org/10.1111/j.1467-8624.2005.00879.x
Mathewson, T. G. (2019). How to unlock students' internal drive for learning. *The Hechinger Report*. https://hechingerreport.org/intrinsic-motivation-is-key-to-student-achievement-but-schools-kill-it/
Mavric, M. (2020). The Montessori Approach as a Model of Personalized Instruction. *Journal of Montessori Research*, *6*(2), 13–25. https://doi.org/10.17161/jomr.v6i2.13882
Mayol-Garcia, Y. (2022). Girls take lessons, join clubs more often than boys but boys play more sports. Retrieved from Children Continue to be More Involved in Some Extracurricular Activities (census.gov) on March 5, 2024.*United States Census Bureau*. https://www.census.gov/library/stories/2022/07/children-continue-to-be-involved-in-extracurricular-activities.html
McCann, D., Barrett, A., Cooper, A., Crumpler, D., Dalen, L., Grimshaw, K., Kitchin, E., Lok, K., Porteous, L., Prince, E., Sonuga-Barke, E., Warner, J. O., & Stevenson, J. (2007). Food additives and hyperactive behaviour in 3-year-old and 8/9-year-old children in the community: a randomised, double-blinded, placebo-controlled trial. *The Lancet (London, England), 370*(9598), 1560–1567. https://doi.org/10.1016/S0140-6736(07)61306-3
McCloskey, M., & Rapp, B. (2017). Developmental dysgraphia: an overview and framework for research. *Cognitive Neuropsychology, 34*, 65–82. https://doi.org/10.1080/02643294.2017.1369016
McGuire, L., Mulvey, K. L., Goff, E., Irvin, M. J., Winterbottom, M., Fields, G. E., Hartstone, Rose, A., & Rutland, A. (2020). STEM gender stereotypes from early childhood through adolescence at informal science centers. *Journal of Applied Developmental Psychology*, *67*, Article 101109. https://doi.org/10.1016/j.appdev.2020.101109
McQuiggan, M., Megra, M., & Grady, S. (2017). Parent and family involvement in education: Results from the National Household Education Surveys Program of 2016 (NCES2017-102). National Center for Education Statistics website. https://nces.ed.gov/pubs2017/2017102.pdf
Mhalla A., Guedria A., Brahem T., Amamou B., Sboui W., Gaddour N., & Gaha, L. (2018). ADHD in Tunisian adolescents: prevalence and associated factors. *Journal of Attention Disorders, 22*, 154–162. https://doi.org/10.1177/1087054717702217
Miller, R. (2011). *Vygotsky in perspective*. Cambridge University Press. https://doi.org/10.1017/CBO9780511736582
Monei, T., & Pedro, A. (2017). A systematic review of interventions for children presenting with dyscalculia in primary schools. Educational *P*sychology in *P*ractice, 33(3), 277–293. https://doi.org/10.1080/02667363.2017.1289076
Mowlem, F., Agnew-Blais, J., Taylor, E., & Asherson, P. (2019). Do different factors influence whether girls versus boys meet ADHD diagnostic criteria? Sex differences among children with high ADHD symptoms. *Psychiatry Research, 272*, 765–773. https://doi.org/10.1016/j.psychres.2018.12.128
Mullis, I. V., Martin, M. O., Foy, P., Kelly, D. L., & Fishbein, B. (2020). TIMSS 2019 International results in mathematics and science. *Boston College, TIMSS & PIRLS International Study Center.* https://timssandpirls.bc.edu/timss2019/
Musu-Gillett, L., Wigfield, A., Harring, J., & Eccles, J.S. (2015). Trajectories of change in students' self-concepts of ability and values in math and college major choice. *Educational Research and Evauation, 21*, 343–370. https://doi.org/10.1080/13803611.2015.1057161
Neuman, A. (2019). Criticism and education: Dissatisfaction of parents who homeschool and those who send their children to school with the education system. *Educational Studies*, 45(6), 726–741. https://doi.org/10.1080/03055698.2018.1509786
Neuman, A. (2020). Ask the young: What homeschooled adolescents think about homeschooling. *Journal of Research in Childhood Education*, *34*(4), 566–582. https://doi.org/10.1080/02568543.2019.1710628
O'ktamovna, S. M. (2024). Extracurricular activities in primary grades. *The Multidisciplinary Journal of Science and Technology, 4(3),* 654–660. http://mjstjournal.com/index.php/mjst/article/view/1134
Oberle E., Ji X. R., Magee C., Guhn M., Schonert-Reichl K. A., & Gadermann A. M. (2019) Extracurricular activity profiles and wellbeing in middle childhood: A population level study. *PLOS* ONE 14(7): Article e0218488. https://doi.org/10.1371/journal.pone.0218488
Peterson, B. S., Trampush, J., Brown, M., Maglione, M., Bolshakova, M., Rozelle, M., ... Miles, J., Pakdaman, S., Yagyu, S., Motala, A., & Hempel, S. (2024). Tools for the diagnosis of ADHD in children and adolescents: A systematic review. *Pediatrics*, *153*(4), Article e2024065854. https://doi.org/10.1542/peds.2024-065854
Plante, I., De la Sablonnière, R., Aronson, J. M., & Théorêt, M. (2013). Gender stereotype endorsement and achievement-related outcomes: The role of competence beliefs and task values. *Contemporary Educational Psychology*, *38*(3), 225–235. https://doi.org/10.1016/j.cedpsych.2013.03.004
Rajeh, A., Amanullah, S., Shivakumar, K., & Cole, J. (2017). Interventions in ADHD: A comparative review of stimulant medications and behavioral therapies. *Asian Journal of Psychiatry*, *25*, 131–135. https://doi.org/10.1016/j.ajp.2016.09.005
Rastikerdar, N., Nejati, V., Sammaknejad, N., & Fathabadi, J. (2023). Developmental trajectory of hot and cold executive functions in children with and without attention deficit-hyperactivity disorder (ADHD). *Research in Developmental Disabilities, 137*, Article 104514. https://doi.org/10.1016/j.ridd.2023.104514
Ray, B. D. (2017). A systematic review of the empirical research on selected aspects of homeschooling as a school choice. *Journal of School Choice*, *11*(4), 604–621. https://doi.org/10.1080/15582159.2017.1395638-621.
Ray, B. D. (2024). https://www.nheri.org/research-facts-on-homeschooling/
Redding, C., & Nguyen, T. D. (2020). The relationship between school turnaround and student outcomes: A meta-analysis. *Educational Evaluation and Policy Analysis*, *42*(4), 493–519. https://doi.org/10.3102/0162373720949513
Retelsdorf, J., Schwartz, K., & Asbrock, F. (2015). "Michael can't read!" Teachers' gender stereotypes and boys' reading self-concept. *Journal of Educational Psychology, 107*(1), 186. https://doi.org/10.1037/a0037107
Robinson, K., & Robinson, K. (2022). *Imagine If…: Creating a Future for Us All*. Penguin.
Rosenthal, R., & Jacobson, L. (1968). Pygmalion in the classroom. *The Urban Review*, *3*(1), 16–20. https://doi.org/10.1007/BF02322211
Reuben, C., & Elgaddal, N. (2024). Attention-deficit/hyperactivity disorder in children ages 5–17 years: United States, 2020–2022 (NCHS Data Brief No. 499). National Center for Health Statistics. https://stacks.cdc.gov/view/cdc/148043
Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, *61*, Article 101860. https://doi.org/10.1016/j.cedpsych.2020.101860
Sakarski, G. (2024). Are homeschoolers happy with their educational experience? *Education in Developing, Emerging, and Developed Countries: Different Worlds, Common Challenges. BCES Conference Books, 22*.
Salari, N., Ghasemi, H., Abdoli, N., Rahmani, A., Shiri, M. H., Hashemian, A. H., Akbari, H., & Mohammadi, M. (2023). The global prevalence of ADHD in children and adolescents: a systematic review and meta-analysis. *Italian Journal of Pediatrics*, *49*(1), Article 48. https://doi.org/10.1186/s13052-023-01456-1
Schleider, J. L., & Weisz, J. R. (2016). Reducing risk for anxiety and depression in adolescents: Effects of a single-session intervention teaching that personality can change. *Behaviour Research and Therapy*, *87*, 170–181. https://doi.org/10.1016/j.brat.2016.09.011
Sheng, X. (2018). Home education and law in China. *Education and Urban Society*, 50(6), 575–592. https://doi.org/10.1177/0013124517713606
Shi, B., Wu, W., Dai, M., Zeng, J., Luo, J., Cai, L., Wan, B. & Jing, J. (2021). Cognitive, language, and behavioral outcomes in children with autism spectrum disorders exposed to early comprehensive treatment models: A meta-analysis and meta-regression. *Frontiers in Psychiatry, 12*. https://doi.org/10.3389/fpsyt.2021.691148
Siok, W. T., & Qin, L. (2022). Cross-Cultural Unity and Diversity of Dyslexia. In M. A. Skeide (Eds.), *The Cambridge Handbook of Dyslexia and Dyscalculia* (pp. 267–281). chapter, Cambridge: Cambridge University Press.
Skagerlund, K., & Träff, U. (2014). Number processing and heterogeneity of developmental Dyscalculia: Subtypes With different cognitive profiles and deficits. Journal of Learning Disabilities, 49, 36–50. https://doi.org/10.1177/00222194145227
Solorzano, R. W. (2019). High stakes testing and educational inequality in K–12 schools. In *Oxford Research Encyclopedia*. https://doi.org/10.1093/acrefore/9780190264093.013.938
Sourander, A., Sucksdorff, M., Chudal, R., Surcel, H. M., Hinkka-Yli-Salomäki, S., Gyllenberg, D., Cheslack-Postava, K., & Brown, A. S. (2019). Prenatal cotinine levels and ADHD among offspring. *American Academy of Pediatrics, 143*(3), Article e20183144. https://doi.org/10.1542/peds.2018-3144
Storebø, O. J., Storm, M. R., Pereira Ribeiro, J., Skoog, M., Groth, C., Callesen, H. E., Schaug, J. P., Darling Rasmussen, P., Huus, C-M. L., Zwi, M., Kirubakaran, R., Simonsen, E., & Gluud, C.. (2023). Methylphenidate for children and adolescents with attention deficit hyperactivity disorder (ADHD). *Cochrane Database of Systematic Reviews, 3*. Art. No.: CD009885. https://doi.org/10.1002/14651858.CD009885.pub3
Swanson, H. L. (2023). Meta-analysis of research on children with learning disabilities. *Learning Disabilities: A Multidisciplinary Journal*, *28*(2). https://doi.org/10.18666/LDMJ-2023-V28-I2-12307
The World Bank (2023). https://data.worldbank.org/indicator/SE.PRM.Ages
UNESCO (2023). 250 million children out-–of-–school: What you need to know about UNESCO's latest education data. https://www.unesco.org/en/articles/250-million-children-out-school-what-you-need-know-about-unescos-latest-education-

data#:~:text=New%20UNESCO%20data%20shows%20that,progress%20continues%20to%20stagnate%20globally.Retrieved from 250 million children out-of-school: What you need to know about UNESCO's latest education data | UNESCO on March 4, 2024.
U.S. Department of Education. (2024, February 16). *A history of the Individuals With Disabilities Education Act*. https://sites.ed.gov/idea/IDEA-History
Vandell, D. L., Larson, R. W., Mahoney, J. L., & Watts, T. W. (2015). Children's organized activities. In R. M. Lerner, M. H. Bornstein & T. Leventhal (Eds), Handbook of child psychology and developmental science: ecological settings and processes (pp. 305–334). Hoboken, NJ: John Wiley.
Vaughn, S., Miciak, J., Clemens, N., & Fletcher, J. M. (2024). The critical role of instructional response in defining and identifying students with dyslexia: a case for updating existing definitions. *Annals of Dyslexia*, 1-12. https://doi.org/10.1007/s11881-024-00303-0
Walsh, B. (2017). Reclaiming downtime. https://www.gse.harvard.edu/ideas/usable-knowledge/17/07/reclaiming-downtime
Whitebread, D. & Bingham, S. (2013). Too much, too young: Should schooling start at age 7? *New Scientist*. https://www.newscientist.com/article/mg22029435-000-too-much-too-young-should-schooling-start-at-age-7/Retrieved from Dif
Wilkins, N. J., Verlenden, J. M., Szucs, L. E., & Johns, M. M. (2023). Classroom management and facilitation approaches that promote school connectedness. *Journal of School Health*, *93*(7), 582–593. https://doi.org/10.1111/josh.13279
Yang, L., Li, C., Li, X., Zhai, M., An, Q., Zhang, Y., Zhao, J., & Weng, X. (2022). Prevalence of developmental dyslexia in primary school children: A systematic review and meta–analysis. *Brain Sciences*, *12*(2), 240. https://doi.org/10.3390/brainsci12020240
Yeager, D. S., & Dweck, C. S. (2020). What can be learned from growth mindset controversies?. *The American Psychologist*, *75*(9), 1269–1284. https://doi.org/10.1037/amp0000794
Yeager, D. S., Carroll, J. M., Buontempo, J., Cimpian, A., Woody, S., Crosnoe, R., Muller, C., Murray, J., Mhatre, P., Kersting, N., Hulleman, C., Kudym, M., Murphy, M., Duckworth, A. L., Walton, G. M., & Dweck, C. S. (2022). Teacher mindsets help explain where a growth-mindset intervention does and doesn't work. *Psychological Science, 33*(1), 18–32. https://doi.org/10.1177/09567976211028984
Yeager, D.S., Hanselman, P., Walton, G.M., Murray, J. S., Crosnoe, R., Muller, C., Tipton, E., Schneider, B., Hulleman, C. S., Hinojosa, C. P., Paunesku, D., Romero, C., Flint, K., Roberts, A., Trott, J., Iachan, R., Buontempo, J., Yang, S. M., Carvalho, C. M., Hahn, P. R., Gopalan, M., Mhatre, P., Ferguson, R., Duckworth, A. L., & Dweck, C. S. (2019). A national experiment reveals where a growth mindset improves achievement. *Nature, 573*, 364–369. https://doi.org/10.1038/s41586-019-1466-y
Zorlu, A., Unlu, G., Cakaloz, B., Zencir, M., Buber, A., & Isildar, Y. (2020). The prevalence and comorbidity rates of ADHD among school-age children in Turkey. *Journal of Attention Disorders, 24*(9), 1237-1245. https://doi.org/10.1177/1087054715577991

7.5 Language in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify milestones in language development in middle childhood
- Discuss the benefits and challenges facing multilingual speakers and learners

Eight-year-old Troy's aunt has noticed that his vocabulary has grown considerably, and that she can now have detailed conversations with him about his day as well as about his hopes and dreams. He still makes some grammatical errors when he's speaking, but they are becoming less frequent. He's also starting to love puns and knock-knock jokes, which makes conversations with him so much more fun. And he loves sharing that he can count to ten in Spanish, French, and Mandarin—all thanks to a new initiative in his elementary school to expose children to world languages at an earlier age.

Language skills continue to develop during middle childhood, which is when children become much more effective communicators, both verbally and nonverbally. In this section, you'll explore some of the major milestones they achieve before considering the benefits and challenges of multilingualism in middle childhood.

Language Milestones

By middle childhood children can easily express their thoughts and engage in full conversations, but language is complicated and continues to develop throughout childhood. There are significant increases in vocabulary and children continue to learn grammatical rules. They also learn that language changes when communicating with people in different social contexts (adults versus peers, for example). Children also make great strides in their reading abilities during middle childhood, which will become one of the major ways in which they learn as they get older. Facets of language development that improve in middle childhood including vocabulary and grammar, pragmatic skills, and reading skills.

Vocabulary and Grammar

Vocabulary increases dramatically in middle childhood and is associated with other developmental outcomes. Vocabulary is important for reading as well as for language processing (Li et al., 2021). Children with larger vocabulary sizes are also better at describing and recognizing emotions (Beck et al., 2012).

As children get older, they become more aware of the qualities of language and can think about and evaluate language, a skill known as **metalinguistic awareness** (Simard & Gutiérrez, 2017). For example, in addition to mastering new words, children begin to learn that many words have similar meanings and can refer to the same object or action, such as *animal* and *mammal*. They also begin to understand that one word can have multiple meanings. For example, *duck* can refer to an animal or an action. This new ability is one of the reasons children begin to appreciate humor, puns, and eventually sarcasm. For example, in the preceding

vignette, Troy loves jokes. He might enjoy one like this: "What did Baby Corn say to Mama Corn? Answer: Where is Popcorn?"

What fuels the vocabulary explosion seen during middle childhood? Certainly, our everyday experiences are important for introducing us to specific words. Learning vocabulary is closely tied to reading, too, as well as to socioeconomic status (Van der Kleij et al., 2022). Children from lower socioeconomic statuses tend to be exposed to less language with less diverse vocabulary, which has consequences for vocabulary development and for reading (Lervåg et al., 2019). Vocabulary has also been shown to grow significantly during the school year but less so during summer holidays, particularly among low SES children (Van der Kleij et al., 2022).

More grammatical rules become familiar during middle childhood. Children begin studying the parts of language and sentence structure as one element of their formal schooling. They also begin to understand more complex grammar, such as passive voice ("The baby is being fed") and conditional sentences ("If I had been home, I would have finished my chores"). For English-speaking children, grasping these more complex grammatical structures depends on gaining more experience with and exposure to sophisticated language and sentence structure. Thus, it takes longer to master these types of sentences than sentences that use active voice ("The baby is eating"). However, in other cultures that use more passive-voice sentences, children understand and use the passive voice earlier. For example, in Northern East Cree, a language spoken by Indigenous peoples in Canada, children use the passive voice much earlier than do children who are speaking English (Henke et al., 2024).

Pragmatics

As children get older, they continue to learn to change their speech in response to the needs of the listener. As discussed in 5.4 Language in Early Childhood, pragmatics is the way we use language in different social contexts, and a useful tool for developing social relationships with others. It requires understanding 1) how to use language for different functions such as requesting something, telling a story, or conveying knowledge, 2) how to use written language differently across contexts such as text messages versus emails or writing an essay for school, 3) how to change language to meet the needs of listeners as different as a grandparent and a friend, or to speak up in a noisy room, and 4) the "hidden" rules of conversation such as taking turns and using eye contact, body gestures, and facial expressions. The use of pragmatics during middle childhood also includes code-switching, which refers to using more than one form of language within a single conversation. Although it is often seen among multilingual speakers, children may also code switch when alternating between speech used in different social contexts such as speaking differently to peers versus teachers. For example, if you are talking to a peer you might use more casual language and slang, but quickly switch to more formal language when a teacher calls on you.

Although many children are able learn pragmatics through everyday social interactions, those with certain developmental disabilities may struggle to do so. For example, one study found that children with ADHD scored lower on a pragmatic language assessment than typically developing children, but higher than children with a developmental language disorder (Vassiliu et al., 2023). For example, a child with ADHD might sometimes have difficulty with language pragmatics by frequently interrupting others during conversations or speaking too loudly in a quieter space, which could be distracting or disruptive to peers.

Reading

Learning to read and write is a significant milestone for middle childhood. The fundamentals needed for reading—such as spoken language, an understanding of the alphabet and the sounds each letter makes, and the knowledge that spoken sounds correspond to written words—begins during infancy and early childhood. But it is during middle childhood that children coordinate these skills and begin to read (Figure 7.19). Unlike many other developmental skills, reading does not come naturally to most children. In fact, only 5 percent of children learn to read without help (Willingham, 2015). Reading requires explicit teaching as well as practice. The teaching of reading to children has been approached in several ways. The ongoing debate regarding which

method is most effective is often referred to as the "reading wars" (Castles et al., 2018).

FIGURE 7.19 The improved reading skills of middle childhood can open new worlds of learning and curiosity. (credit: "Children and Nature" by Children Nature Network/nappy, Public Domain)

There are two primary approaches to teaching reading. The **phonics approach** helps children understand how to translate letters into sounds and then put those individual sounds together to create words. In essence, children are taught how to sound out words. Unlike many languages, however, English has more sounds (44) than letters (26) which makes learning to read it more difficult (Kerestes et al., 2024). For example, the letter C can make more than one sound including the /k/ sound as in "car" or the /s/ sound as in 'pencil'. Even more confusing is that C can make both sounds within one word such as 'council.'

A second approach to teaching reading, the **whole-language approach**, focuses on teaching reading in natural contexts such as books rather than focusing on the sounds that make up words. Since the early 2000s, many schools have adopted a **balanced literacy approach**, intending to blend the best elements of the phonics-based and whole-language methods. In addition to sounding out words phonetically, the balanced approach teaches students to recognize core words (often referred to as "sight words" in schools) like "they" or "and" as a single word rather than a collection of letters. Phonics is included based on research showing that phonics and phonemic awareness, the ability to identify and manipulate the individual sounds in words, are both important predictors of reading skills (Faris, 2023). In fact, children who have received instruction on phonics score significantly better on standardized tests of reading (National Early Literacy Panel, 2008). Recent research has also shown that a balanced literacy approach is effective for teaching English language learners (Mirhosseini & Sharif, 2022).[3]

3 This study (Mirhosseini & Sharif, 2022) uses the term "English as a Foreign Language (EFL)."

Despite this intense focus on how to teach reading, by fourth grade only 32 percent of U.S. children are proficient readers (National Assessment of Educational Progress, 2023). Unfortunately, school closures related to the COVID-19 pandemic resulted in a lower rate of proficient readers in elementary school and the negative impact was worse for students from lower socioeconomic backgrounds as well as for English learners and students with disabilities (Relyea et al., 2023).[4] Difficulties learning to read are associated with later challenges in mental health, academic achievement, and vocations (Hendren et al., 2018). Children who are struggling with academic achievement, including reading, are more likely to drop out of school (Lowder et al., 2022). Many continue to have difficulty reading as adults. In fact, about 23 percent of U.S. adults lack literacy skills which is defined by the Program for the International Assessment of Adult Competencies as "the ability to understand, evaluate, use and engage with written texts to participate in society, to achieve one's goals, and to develop one's knowledge and potential" (p. 61, OECD 2013). Compare this to other countries, such as Costa Rica, where only 4 percent of the population does not have literacy skills.

INTERSECTIONS AND CONTEXTS

How Much Did COVID School Closures Set Students Back?

COVID-19 school closures had a significant impact on student learning. The pivot to remote learning negatively impacted student academic performance and many students did not perform at grade level on standardized assessment for both mathematics and reading both during the closures or after schools reopened (Colvin et al., 2022; Cortés-Albornoz et al., 2023). Furthermore, the loss of learning was worse for children living in lower SES families (Moscoviz & Evans, 2022). For example, low-income families had less access to devices and to reliable internet (Francis & Weller, 2022). In low-income households with several school-aged children, students were often forced to share a single device. As a result, many children from lower SES families were forced to drop out of school or received less learning time (Zagalaz-Sánchez et al., 2021).

The pandemic also increased stressors more for lower-income families with many households experiencing unemployment or underemployment that led to food and housing insecurity and increases in parental depression and anxiety (Fahle et al., 2023). All these factors may have impacted the mental health of children and their parents' ability to help them with schoolwork. Finally, the pandemic increased social isolation in children due to the major disruptions that happened to daily life and activities (Fahle et el., 2023).

As a result of all these factors, research studies have reported larger losses in learning among children attending schools with higher levels of poverty than among children in lower poverty schools (Kuhfeld et al., 2022).[5] It will likely take years to fully recover from this loss of learnings and will require schools to make significant investments in student learning over several years (Fahle et al., 2023).

Multilingualism

Many children around the world grow up in multilingual households, where more than one language is spoken. In the United States, approximately 26 percent of children are multilingual, a relatively low rate compared to other areas such as Singapore (90 percent), Europe (67 percent), and Canada (55 percent) although multilingualism is increasing in the United States (Luk, 2017; Wu et al., 2020). It varies quite a bit from state to state, with California having the highest rates at 43 percent and West Virginia the lowest, around 2 percent (Annie E. Casey Foundation, 2018). U.S. multilingual children speak a total of more than 100 different languages, but approximately 75 percent speak Spanish and English (Dietrich & Hernandez, 2022).

Thus, in many parts of the United States, multiple languages may be spoken by the children in a single classroom. Even more challenging for teachers is the wide range of abilities among these children. While some may speak more than one language well and may have homes that are multilingual, others may not speak

4 This study (Relyea et al., 2023) uses the terms "English learner" and "English-fluent."
5 This study (Kuhfeld et al., 2022) uses the terms "low-poverty schools" and "high-poverty schools."

English as well as the language they speak at home. Others may be losing competence in their home language as they become more competent in the language spoken at school (Tse, 2001). Still others may view English as being more important for the future success than their first or home language and, thus, may be less likely to use the latter regularly (Mohamed, 2020).

Children who are multilingual must become adept at regularly switching between languages (Tulloch & Erika, 2023), a speech style called multilingual code-switching (or translanguaging). Multilingual code-switching requires competency in at least two languages and is associated with strongly identifying with two cultures (Yim & Clément, et al., 2021). While some children learn multiple languages at the same time beginning at birth, others may learn one language in their early years and then add a second. In this case it takes longer to master the second language than it does if both languages are learned at the same time (Paradis, 2023).

LINK TO LEARNING

Some people are unsure about how to handle themselves in unfamiliar social situations and will feel intimidated. Others can easily maneuver in any social situation and blend in easily because they understand how to code switch. Watch this TED Talk about code-switching by Katelynn Duggins (https://openstax.org/r/104CodeSwitchng) to learn more.

The Impact of Multilingualism on Development

Recent research suggests that any disadvantages associated with being bilingual are erased by its numerous advantages (Dentella et al., 2024). These include better executive functioning, memory, selective attention, and analytical reasoning (Nguyen et al., 2023; Planckaert et al., 2023). For example, children who speak multiple languages have better cognitive control because they must inhibit one language while they use another. They also have better metalinguistic skills than children who only speak one language. For example, children who are bilingual can understand grammatical rules more easily than children who speak a single language. There are also social benefits to multilingualism, such as being able to participate in diverse communities (Djonov, 2019).

LINK TO LEARNING

What are the advantages to having a bilingual (or multilingual) brain? Watch this TED Talk by Educator Mia Nacamulli about how our brains benefit from knowing more than one language (https://openstax.org/r/104MultiLnguags) to learn more.

There are some challenges associated with multilingualism. Some children may have smaller vocabularies in both languages than children who only speak a single language (Bialystok & Feng, 2011). They may also have difficulties maintaining the language they speak at home. For example, some studies have shown that children who were multilingual before five years of age often ended up speaking only the dominant language of the country in which they lived by the time they were 5 years old (Verdon et al., 2014). However, the children of parents who encourage their children to be bilingual have more positive language outcomes than other multilingual children (Mak et al., 2023).

Approaches to Multilingualism in the Classroom

There is a long debate about how best to teach English to multilingual children who are English Language Learners (ELL), meaning they are not yet proficient in English by the time they start school. Several different strategies exist (ALİSOY, 2024). One consists of immersion programs, which teach all academic subjects in English. These programs are associated with an increased loss of the native language. Another strategy is to begin instruction in the primary language of the student and gradually add in instruction in English. These programs are referred to as developmental bilingual programs.

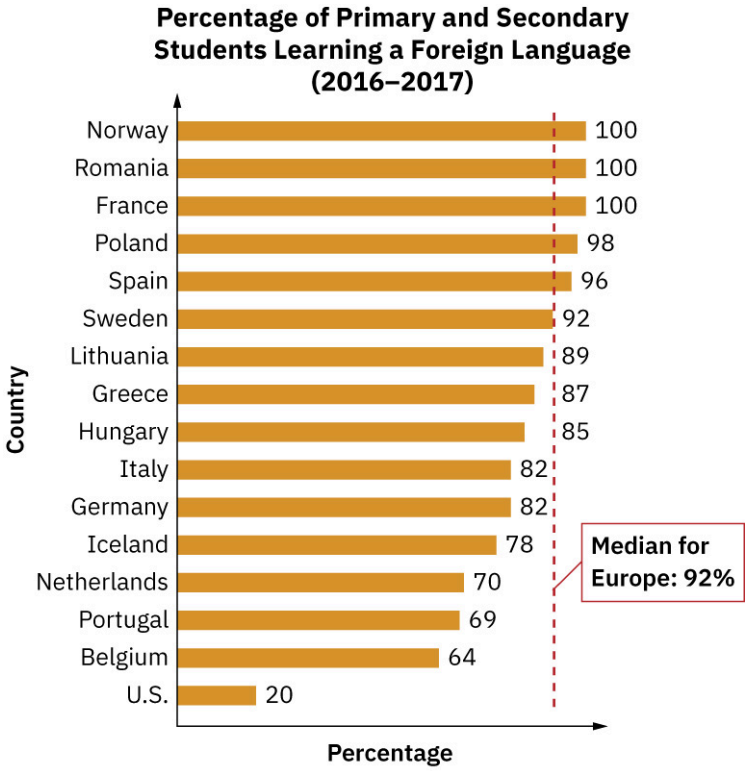
Programs between immersion and developmental bilingual programs are English as a Second Language (ESL) and two-way immersion programs. In ESL programs, all non-English speaking students are taught in a single classroom. Children often spend part of their day learning English in specific ESL classrooms, but there is no accommodation for their native language in other academic classes. In two-way immersion programs, instruction occurs equally in two languages (Collier & Thomas, 2017). Since both languages are valued equally, students feel their cultural heritage is respected. They have also been found to have enhanced self-esteem and to retain their native language better than students in other types of bilingual programs (Pedrone, 2018).

Two-way immersion programs are more effective than immersion programs for the successful learning of English (Linholm-Leary, 2011). However, two-way immersion programs are not universally accepted. Some research has suggested that there may not be positive impacts for all core academic subjects such as mathematics, reading, and science (Steele et al., 2017) and that it there are racial disparities for access to schools that offer this approach to language learning (Flores & Garcia, 2017). In addition, these programs are less common than immersion programs because they require teachers who are highly skilled and fluent in both languages. Two-way immersion is also not practical in schools in which multiple other languages are spoken besides English. Ultimately, the specific method applied often depends on the goals of the school. If the primary goal is to assimilate children into U.S. society and culture, the school will likely use an immersion approach. If the goal is to encourage multiculturalism, the two-way immersion approach is more likely to be effective.

Second Language Education

Children tend to learn new languages more easily than adults (Ghasemi & Hashemi, 2011). This may be partly because they are more willing to use the language without fear of making errors or because their brains have more neural plasticity or flexibility (Birdsong, 2017). In addition, non-native speakers who learned a language before the age of 10 are often difficult to distinguish from a native speaker of that language (Ghasemi & Hashemi, 2011). For this reason, childhood is often referred to as a critical period for the acquisition of a second language (Birdsong, 2017). Even adolescents up to age 17 or 18 can learn the grammar structure of a new language more easily than adults (Hartshorne et al., 2018).

Despite the clear research showing that children can learn a new language much more easily than they will be able to do so later in life, children often do not begin learning a new language in school until adolescence—if at all. In fact, only about 20 percent of children in the United States learn a second language during school (Stein-Smith, 2019). This is very different than in other countries where learning a second language is prioritized. For example, in most European countries, learning a second language is required and students begin learning another language in school between 6 and 9 years of age (Pew Research Center, 2018; Devlin, 2018) (Figure 7.20).



Note: Data not available for the UK, Ireland or the Republic of Macedonia. U.S. includes 50 states and the District of Columbia.

Source: Devlin, K. (2018). Most European students are learning a foreign language in school while Americans lag. Pew Research Center.

FIGURE 7.20 Learning more than one language in school is much more common in many European countries than in the United States. (data source: Pew Research Center; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Taken together, the human ability to learn multiple languages shows how adaptable and resilient the human brain is. The fact that children do such learning with more ease is another example illustrating a sensitive period in lifespan development.

References

Alisoy, H. Effective strategies in primary second language education. *Preprints* 2024, Article 2024010330. https://doi.org/10.20944/preprints202401.0330.v1

Annie E. Casey Foundation (2018). The number of bilingual kids in America continues to risk. https://www.aecf.org/blog/the-number-of-bilingual-kids-in-america-continues-to-rise. Retrieved March 18, 2024.

Beck, L., Kumschick, I. R., Eid, M., & Klann-Delius, G. (2012). Relationship between language competence and emotional competence in middle childhood. *Emotion, 12*(3), 503–514. https://doi.org/10.1037/a0026320

Bialystok, E. & Feng, X. (2011). Language proficiency and its implications for monolingual and bilingual children. In Durgunoglu, A. Y. & Goldenberg, C. (eds), *Language and literacy development in bilingual settings*, 121–38. New York: Guilford.

Birdsong D. (2017). Critical periods. In: Aronoff M, editor. *Oxford Bibliographies in Linguistics*. New York: Oxford University Press; 2017. http://dx.doi.org/10.1093/obo/9780199772810-0139

Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: reading acquisition from novice to expert. *Psychological Science in the Public Interest, 19,* 5–51. https://doi.org/10.1177/1529100618772271

Collier, V. P., and W. P. Thomas. (2017). "Validating the power of bilingual schooling: Thirty-two years of large–scale, longitudinal research." Annual Review of Applied Linguistics 37: 203–217. https://doi.org/10.1017/S0267190517000034

Colvin M.K. (Molly), Reesman J., & Glen T. The impact of COVID-19 related educational disruption on children and adolescents: an interim data summary and commentary on ten considerations for neuropsychological practice. *The Clinical Neuropsychologist*. 2022; 36: 45–71. https://doi.org/10.1080/13854046.2021.1970230

Cortés-Albornoz, M. C., Ramírez-Guerrero, S., García-Guáqueta, D. P., Vélez-Van-Meerbeke, A., & Talero-Gutiérrez, C. (2023). Effects of remote learning during COVID-19 lockdown on children's learning abilities and school performance: A systematic review. *International Journal of Educational Development, 101*, Article 102835. https://doi.org/10.1016/j.ijedudev.2023.102835

Dentella, V., Masullo, C., & Leivada, E. (2024) Bilingual disadvantages are systematically compensated by bilingual advantages across tasks and populations. *Scientific Reports, 14*, Article 2107. https://doi.org/10.1038/s41598-024-52417-5

Devlin, K. (2018). Most European students are learning a foreign language in school while Americans lag. *Pew Research Center*. https://www.pewresearch.org/short-reads/2018/08/06/most-european-students-are-learning-a-foreign-language-in-school-while-americans-lag/

Dietrcih, S. & Hernandez, E. (2022). Nearly 68 million people spoke a language other than English at home in 2019. https://www.census.gov/library/stories/2022/12/languages-we-speak-in-united-states.html

Djonov, E. (2019). Bilingualism and multilingualism in early childhood education (Australia). *Bloomsbury Education and Childhood Studies, 2019*. https://doi.org/10.5040/9781350996298.0010

Fahle, E.M., Kane, T.J., Patterson, T., Reardon, S.F., Staiger, D.O., & Stuart, E. A. (2023). School district and community factors associated with learning loss during the

COVID-19 pandemic. https://cepr.harvard.edu/sites/hwpi.harvard.edu/files/cepr/files/explaining_covid_losses_5.23.pdf
Faris, A. S. (2023). The effectiveness of phonics approach in teaching reading. *IJECA (International Journal of Education and Curriculum Application)*, *1*(1), 11–15. https://doi.org/10.31764/ijeca.v0i0.1981
Flores, N., & García, O. (2017). A critical review of bilingual education in the United States: From basements and pride to boutiques and profit. *Annual Review of Applied Linguistics*, *37*, 14–29. https://doi.org/10.1017/S0267190517000162
Francis, D. V., & Weller, C. E. (2022). Economic inequality, the digital divide, and remote learning during COVID-19. *The Review of Black Political Economy*, *49*(1), 41-60. https://doi.org/10.1177/00346446211017797
Ghasemi, B. & Hashemi, M. (2011). Foreign language learning during childhood. *Social and Behavioral Sciences, 28,* 872–876. https://doi.org/10.1016/j.sbspro.2011.11.160
Hartshorne, J. K., Tenenbaum, J. B., & Pinker, S. (2018). A critical period for second language acquisition: Evidence from 2/3 million English speakers. *Cognition*, *177*, 263-277. https://doi.org/10.1016/j.cognition.2018.04.007
Hendren, R. L., Haft, S. L., Black, J. M., White, N. C., & Hoeft, F. (2018). Recognizing psychiatric comorbidity with reading disorders. *Frontiers in Psychiatry*, *9*, Article 101. https://doi.org/10.3389/fpsyt.2018.00101
Henke, R. E., Brittain, J., Deen, K. U., & Acton, S. (2024). The acquisition of the passive voice in Northern East Cree. *First Language*, *44*(1), 44–37. https://doi.org/10.1177/01427237231198758
Kerestes, G., Hjelmquist, E., Veisson, M. & Siegel, L.S. (2024). The importance of fluence in reading: A comparison of English, Swedish, Croation and Estonian. *Reading Psychology*. https://doi.org/10.1080/02702711.2024.2319576
Kuhfeld, M., Soland, J., & Lewis, K. (2022). Test Score Patterns Across Three COVID-19-Impacted School Years. *Educational Researcher, 51*(7), 500–506. https://doi.org/10.3102/0013189X221109178
Lervåg A., Dolean D., Tincas I., & Melby-Lervåg M. (2019). Socioeconomic background, nonverbal IQ and school absence affects the development of vocabulary and reading comprehension in children living in severe poverty. *Developmental Science, 22*(5), Article e12858. https://doi.org/10.1111/desc.12858
Li, L., Zhu, D., & Wu, X. (2021). The effects of vocabulary breadth and depth on reading comprehension in middle childhood: The mediator role of listening comprehension. *Reading & Writing Quarterly*, *37*(4), 336-347. https://doi.org/10.1080/10573569.2020.1809585
Lindholm-Leary, K. (2011). Student outcomes in Chinese two-way immersion programs: Language proficiency, academic achievement, and student attitudes. In D. J. Tedick, D. Christian, & T. W. Fortune (Eds.), *Immersion education, : Practices, policies, possibilities* (pp. 81–103). https://doi.org/10.21832/9781847694041-008
Lowder, Christopher, Chris O'Brien, Dawson Hancock, Jeremy Hachen, and & Chuang Wang. "High school success: A learning strategies intervention to reduce drop-out rates." *The Urban Review* 54, no. 4 (2022): 509–530. https://doi.org/10.1007/s11256-021-00624-z
Luk, G. (2017). Bilingualism. In B. Hopkins, Geangu, & S. Linkenauger (Eds.), *The Cambridge Encyclopedia of Child Development*, 2nd ed. (pp. 385–391). Cambridge, UK: Cambridge University Press. https://doi.org/10.1017/9781316216491.062
Mak, E., N. Nichiporuk Vanni, X. Yang, M. Lara, Q. Zhou, and Y. Uchikoshi. (2023). "Parental perceptions of bilingualism and home language vocabulary: Young bilingual children from low-income immigrant Mexican American and Chinese American Families." *Frontiers in Psychology, 14*. https://doi.org/10.3389/fpsyg.2023.1059298 .
Mirhosseini, S. & Sharif, N. (2022). Phonics vs. whole language in teaching EFL to young learners: A micro-ethnographic study. *Interdisciplinary Studies in English Language Teaching*. https://iselt.journals.umz.ac.ir/article_3715_7b803d503218b31fb93f48e01859f4df.pdf
Mohamed, N. (2020). First Language Loss and Negative Attitudes Towards Dhivehi Among Young Maldivians: Is the English-First Educational Policy to Blame?. *TESOL Quarterly, 54*(3), 743–772. https://doi.org/10.1002/tesq.591
Moscoviz, L., & Evans, D. K. (2022). Learning loss and student dropouts during the COVID-19 pandemic: A review of the evidence two years after schools shut down [Working Paper 609]. Center for Global Development. https://www.cgdev.org/sites/default/files/learning-loss-and-student-dropouts-during-covid-19-pandemic-review-evidence-two-years.pdf
National Assessment of Educational Progress (2023). An overview of NAEP. Washington, D.C.: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/nationsreportcard/about/https:// nces.ed.gov/nationsreportcard/readings/states/achievement/?grade=4
National Early Literacy Panel (2008). Developing Early Literacy. Retrieved at Developing EarlyLiteracy: Report of the National Early Literacy Panel (ed.gov) on March 13, 2024. https://lincs.ed.gov/publications/pdf/NELPReport09.pdf
Nguyen, M. V., Hutchison, L. A., Norvell, G., Mead, D. L., & Winsler, A. (2023). Degree of bilingualism and executive function in early childhood. *Language and Cognition*, 1–23. https://doi.org/10.1017/langcog.2023.46
OECD (2013). OECD Skills Outlook 2013: First results from the survey of adult skills. *OECD iLibrary*. https://doi.org/10.1787/9789264204256-en
OECD (2016). Survey of Adult Skills, *OECD Publishing*. https://doi.org/10.1787/9789264258075-en
Paradis, J. (2023). Sources of individual differences in the dual language development of heritage bilinguals. *Journal of Child Language, 50(4),* 793–817. https://doi.org/10.1017/S0305000922000708
Pedrone, J. D. (2018). *The effect of two-way immersion on students' attitudes toward education, other cultures, and self-esteem*. Liberty University. https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=2714&context=doctoral
Pew Research Center (2018). Most European students are learning a foreign language in school while Americans lag. https://www.pewresearch.org/short-reads/2018/08/06/most-european-students-are-learning
Planckaert, N., Duyck, W., & Woumans, E. (2023). Is there a cognitive advantage in inhibition and switching for bilingual children? A systematic review. *Frontiers in Psychology, 14,* Article 1191816. https://doi.org/10.3389/fpsyg.2023.1191816
Relyea, J. E., Rich, P., Kim, J. S., & Gilbert, J. B. (2023). The COVID-19 impact on reading achievement growth of Grade 3-5 students in a US urban school district: variation across student characteristics and instructional modalities. *Reading and Writing, 36*(2), 317–346. https://doi.org/10.1007/s11145-022-10387-y
Simard, D., & Gutiérrez, X. (2017). The study of metalinguistic constructs in second language acquisition research. *The Routledge Handbook of* Language *Awareness*
Steele, J., R. O. Slater, G. Zamarro, T. Miller, J. Li, S. Burkhauser, & M. Bacon. (2017). "Effects of dual–language immersion programs on student achievement: Evidence from lottery data." American Educational Research Journal 54. https://files.eric.ed.gov/fulltext/ED577026.pdf(1S):282S–306S.
Stein-Smith, K. (2019). Rethinking the role of languages in the US: Toward a more diverse cultural identity. *Journal of Language Teaching and Research*, *10*(3), 403-411. https://www.academypublication.com/issues2/jltr/vol10/03/01.pdf
Tse, L. (2001). Resisting and reversing language shift: Heritage-language resilience among U.S. native biliterates. *Harvard Educational Review, 71(4)*, 676–709. https://doi.org/10.17763/haer.71.4.ku752mj536413336
Tulloch, M. K., & Erika, H. O. F. F. (2023). Filling lexical gaps and more: code-switching for the power of expression by young bilinguals. *Journal of Child Language*, *50*(4), 981–1004. https://doi.org/10.1017/S0305000922000307
Van der Kleij, S.W., Burgess, A.P., Ricketts, J., & Shapiro, L.R. (2022). Tracking vocabulary and reading growth in children from lower and higher socioeconomic backgrounds during the transition from primary to secondary education. *Child Development, 94(1),* 357–366. https://doi.org/10.1111/cdev.13862
Vassiliu, C., Mouzaki, A., Antoniou, F., Ralli, A. M., Diamanti, V., Papaioannou, S., & Katsos, N. (2023). Development of structural and pragmatic language skills in children with attention-deficit/hyperactivity disorder. *Communication Disorders Quarterly*, *44*(4), 207–218. https://doi.org/10.1177/15257401221114062
Verdon, S.E., McLeon, S., & Winsler, A. (2014). Language maintenance and loss in a population study of young Australian children. *Early Childhood Research Quarterly, 29(2),* https://doi.org/10.1016/j.ecresq.2013.12.003
Willingham, D.T. (2015). *Raising kids who can read: What parents and teachers can do*. John Wiley & Sons.
Wu, C. Y., O'Brien, B. A., Styles, S. J., & Chen, S. H. A. (2020). The impact of bilingualism on skills development and education. In S. Tan, & S. H. Chen (Eds.), Transforming teaching and learning in higher education (pp. 47–69). Springer. https://doi.org/10.1007/978-981-15-4980-9_3.
Yim, O., & Clément, R. (2021). Acculturation and attitudes toward code-switching: A bidimensional framework. *International Journal of Bilingualism*, *25*(5), 1369–1388. https://doi.org/10.1177/13670069211019466
Zagalaz-Sánchez M.L., Cachón-Zagalaz J., Arufe-Giráldez V., Sanmiguel-Rodríguez A., & González-Valero G. Influence of the characteristics of the house and place of residence in the daily educational activities of children during the period of COVID-19 confinement. *Heliyon*. 2021:7. https://doi.org/10.1016/j.heliyon.2021.e06392

Key Terms

attention-deficit/hyperactivity disorder (ADHD) neurodevelopmental disorder that includes symptoms of inattention, hyperactivity, impulsivity and deficits in executive functions
balanced literacy approach approach to teaching reading that combines elements of the phonics-based and whole language approaches
concrete operational thinking third stage of Piaget's theory on cognitive development during which children begin to understand basic cognitive principles and concepts such as cause and effect, relationships, size, and distance
constructivism idea that students play an active role in acquiring knowledge by constructing it through experience, rather than just passively receiving information
crystallized intelligence existing knowledge that individuals have developed during their life through education and experience
dyscalculia learning disability that involves difficulties in math
dysgraphia learning disability that involves difficulties in writing
dyslexia learning disability that involves difficulties in reading
exceptional learner child who has one or more of a variety of special learning needs
fluid intelligence ability to use logic and to solve problems in new ways
Flynn effect effect that describes the significant increases of scores on intelligence tests over time
general intelligence factor (g) general cognitive factor that underlies multiple cognitive skills
giftedness variation in intelligence marked by cognitive flexibility, cognitive performance, specific ability areas, and an IQ above 130, may be referred to by other terms
individualized education program (IEP) written plan that spells out the specific educational goals and services that have been individualized for a student with a disability
intellectual disability disability that consists of limits in intellectual functioning, often indicated by an IQ score less than 70 and challenges in adaptive functioning
intelligence description of an individual's ability to adapt to the world around them
intelligence quotient (IQ) score used to quantify human intelligence
learning disability condition that impacts learning in a specific academic area
least-restrictive environment principle that states that all children with a disability should receive general education in an environment that is as similar as possible to the one for children without disabilities
mental age age at which a person is performing based on an intelligence test
metacognition knowledge about how we think and learn and how we use that awareness to become better thinkers and learners
metalinguistic awareness awareness of the qualities of language, allowing individuals to think about and evaluate language
metamemory understanding of how memory works
phonics approach approach to teaching language that teaches children to translate letters into sounds and to combine individual sounds to form words
self-efficacy individual's confidence in their ability to successfully solve a problem or complete a task
seriation ability to put objects in order, such as by size or color
triarchic theory of intelligence theory of intelligence that proposes that there are three types of intelligence: analytical, creative and practical
whole-language approach approach to teaching reading that uses natural context such as books rather than focusing on the sounds that make up words

Summary

7.1 Physical Development and Health in Middle Childhood

- During middle childhood, growth rates slow down compared to earlier childhood, but children still increase in height and weight.

- Brain growth allows for improved sensory and motor skills, and faster reaction times and information processing abilities.
- Gross and fine motor skills continue to develop rapidly, allowing children to participate in organized sports activities, meet the demands of a school setting, and gain independence with improvements in self-care.
- Quality sleep should be a priority. A healthy diet and regular exercise also matter for general well-being as well as for cognitive and socioemotional development.
- Other health concerns during middle childhood include poor dental care, asthma, diabetes, accidents, and injuries.

7.2 Cognition in Middle Childhood

- Children reach a variety of cognitive milestones during middle childhood—such as problem solving, thinking logically and flexible, and language use—at different rates. Culture, family, and peers are important influences.
- Piaget believed that during middle childhood, children can use logic to solve concrete problems, such as conservation and seriation.
- The information processing approach to cognitive development focuses on the development of memory, attention, and executive function.
- Theory of mind becomes increasingly sophisticated as children gain more advanced awareness of how their thoughts and feelings differ from others.

7.3 Intelligence in Middle Childhood

- Intelligence is generally defined as the ability of an individual to adapt to the world around them.
- Intelligence is influenced by genetics as well as by environmental factors such as education, poverty, and nutrition.
- The general cognitive ability underlying specific cognitive skills is called general intelligence.
- Some psychologists have proposed that there are multiple types of intelligence.
- A measure of intelligence derived from intelligence tests is called the intelligence quotient (IQ). IQ scores are normally distributed, which means that most people have an IQ near the average (100), and many fewer have scores that are extremely high or extremely low.
- Variations in intelligence, such as intellectual disability and giftedness, can impact academic achievement.

7.4 Contexts: School and Learning Diversity in Middle Childhood

- Education takes place in both formal (schooling) and informal (home, extracurricular activities) settings. Formal education can include teacher-centered classrooms and student-centered classrooms.
- Teachers often use theories of education, including behaviorism and constructivism, to guide their students' learning.
- Student academic achievement can be influenced by a variety of factors, including teacher expectancies and sociodemographic variables and resources.
- Learning disabilities are conditions that impact learning in specific academic areas and include dyslexia, dysgraphia and dyscalculia. One common neurodevelopmental disorder seen in children is attention-deficit/hyperactivity disorder (ADHD).
- Legislation in the United States provides children with disabilities with rights to a free and appropriate education.

7.5 Language in Middle Childhood

- During middle childhood, children have dramatic increases in vocabulary, knowledge of grammatical rules, and metalinguistic awareness.
- Children are learning how to change their speech in response to the needs of the listener. This is referred

to as pragmatics.

- A major task during middle childhood is learning to read. There are two main approaches to teaching reading: the phonics-based approach and the whole language approach.
- Many children speak more than one language. Multilingualism has several positive cognitive and social benefits for development.
- English Language Learners (ELL) have special educational needs. Approaches to teaching ELL students include developmental bilingual programs, English as a Second Language programs, two-way immersion programs, and immersion programs.

Review Questions

1. During middle childhood, in a single year children grow an average of
   a. 2–3 inches in height and 5–7 pounds
   b. 1–2 inches in height and 3–5 pounds
   c. 2–3 inches in height and 7–10 pounds
   d. 1–2 inches in height and 5–7 pounds

2. How many hours of sleep should school-aged children between six and twelve years of age get every night?
   a. 6–7
   b. 7–8
   c. 9–12
   d. 12–15

3. According to the Centers for Disease Control (CDC), how much moderate to vigorous physical activity should school-aged children get each day?
   a. 15–30 minutes
   b. 30–45 minutes
   c. 1 hour
   d. 2 hours

4. Improvements in writing skills are the result of development of _____.
   a. fine motor skills
   b. gross motor skills
   c. neural pruning
   d. prefrontal cortex growth

5. Henry understands that if he drops the model he has been building, the pieces will likely break apart. He is demonstrating his understanding of _____.
   a. conservation tasks
   b. seriation skills
   c. symbolic thought
   d. cause and effect relationships

6. According to Piaget, children in the concrete operational stage of cognitive development are capable of _____.
   a. thinking abstractly
   b. using logic to solve real, tangible problems
   c. solving a false-belief task
   d. dividing their attention between multiple tasks simultaneously

7. Piaget called mental actions that use logic and are reversible _____.

a. operations
b. executive functions
c. metacognitions
d. working memory

8. Cognitive skills tied to the maturation of the prefrontal cortex and used to regulate behavior are _____.
a. operations
b. executive functions
c. metacognitions
d. working memory

9. The knowledge about how we think and learn is _____.
a. metacognition
b. abstract reasoning
c. concrete operational thinking
d. working memory

10. One component of the general definition of intelligence is an individual's ability to
a. adapt to their world
b. succeed in school
c. have a successful career
d. use logic to solve problems

11. Which trend in intelligence scores is described by the Flynn effect?
a. IQ scores fluctuate across childhood.
b. Average IQ scores have steadily increased over time.
c. IQ scores can predict future happiness.
d. IQ scores are no longer useful predictors of academic achievement.

12. On a standardized intelligence test, the average IQ score for a population is
a. around 50
b. around 70
c. around 100
d. around 130

13. What is a key criticism of intelligence tests?
a. The assessments may be culturally biased.
b. The assessments are not standardized.
c. The assessments demonstrate poor reliability.
d. The assessments demonstrate poor validity.

14. Teaching is based on direct instruction by the instructor, and that individual has full focus and control of the room in _____ classrooms.
a. teacher-centered
b. student-centered
c. informal education
d. hidden curriculum

15. Mr. Sahib is a teacher who believes that students should be encouraged to actively explore their environments because this exploration provides the best opportunities for learning. This is an example of

_____.

a. constructivism
b. reinforcement
c. behaviorism
d. informal education

16. Extracurricular activities and the skills that children learn from parents in the home are examples of

a. constructivism
b. informal schooling
c. formal schooling
d. behaviorism

17. Because it emerges in childhood when the brain is still maturing, attention-deficit/hyperactivity disorder is a type of a(n)

a. neurodevelopmental disorder
b. intellectual disability
c. emotional disorder
d. learning disability

18. Dontae understands that *bat* has two different meanings. He also understands that recognizing which meaning is being used by a speaker depends on the context in which the word occurs in a sentence and situation. This is an example of

a. metalinguistic awareness
b. pragmatics
c. phonics
d. whole language

19. Ajah is learning how to sound out the word "car" by making the "k" sound and the "ar" sound. This is an example of the _____ approach to learning to read.

a. phonics-based
b. whole language
c. pragmatics
d. immersion

20. Emma is rapidly switching between English and Spanish when she talks to her friends and her father. She is demonstrating

a. code-switching
b. metalinguistic awareness
c. immersion
d. pragmatics

Check Your Understanding Questions

21. Explain how changes in the brain allow for improved information processing during middle childhood.

22. Describe some health concerns related to nutrition during middle childhood.

23. How might a parent or caregiver optimize the health of their school-aged child?

24. Describe the types of experiences that may impact cognitive development.

25. Describe three operations children can accurately complete during the concrete operational stage of cognitive development.

26. How does information-processing theory differ from Piaget's theory of cognitive development?

27. Briefly describe the three types of intelligence in Sternberg's triarchic theory of intelligence and provide an example of each.

28. What is giftedness and what type of supports can be helpful for gifted children?

29. Briefly describe the characteristics of a student-centered classroom.

30. Describe the impact of the Individuals with Disabilities Act (IDEA) in a school setting.

31. What are at least two factors that contribute to the vocabulary explosion typical in middle childhood?

32. What are at least two benefits and one potential negative impact of multilingualism in children?

Personal Application Questions

33. Reflect on your own growth and physical changes during middle childhood. How did these changes affect your self-esteem and confidence, especially in activities like sports or play? Did you experience any growth spurts or challenges with your physical development?

34. Think back to when you were in elementary school. How did you feel about your gross and fine motor skills? Were there particular activities, such as writing, drawing, or playing sports, where you felt more confident? How did this impact your participation in these activities?

35. Consider your eating habits and physical activity during middle childhood. Were there any family or cultural traditions that influenced your diet or how you exercised? How do you think these habits impacted your overall health and development during that time?

36. Reflect on your ability to tell time when you were in elementary school. How did learning to read a clock impact your daily routine or your understanding of time?

37. Think about a time when you were able to solve a concrete problem (like a math problem or a puzzle) during your childhood. How did your ability to use logical thinking to solve that problem make you feel? What does this say about the impact of Piaget's concrete operational phase on your cognitive development?

38. Reflect on how you organize and remember information when studying. Can you identify any memory strategies you use today that may have begun developing during middle childhood? How do these strategies help you in your current learning or work environments?

39. Reflect on your own experiences growing up. Were there any environmental factors (such as family support, educational resources, or extracurricular activities) that you believe influenced your intelligence? How did these factors help shape your cognitive abilities?

40. Have you ever taken an intelligence test or been assessed in school? Reflect on how you felt about the process and the results. Do you believe that the test accurately reflected your intelligence? Why or why not?

41. Think about a time when you encountered someone with either an intellectual disability or someone who was intellectually gifted. How did their unique abilities impact their daily life and interactions with others? What did you learn from that experience?

42. Reflect on your experiences in school. How did your school's approach to education—whether teacher-centered or student-centered—impact your engagement and learning? What aspects of this approach do you think were most beneficial or challenging for you?

43. Think about a time when you were involved in informal learning (such as a museum visit, extracurricular activity, or a home project). How did this experience support your cognitive development differently from

formal classroom learning? What specific skills or knowledge did you gain, and how do they compare to what you learn in school?

44. Reflect on how your school addressed diversity in learning abilities. Were there programs or strategies in place to support students with different learning needs? How did these approaches affect students' academic and social experiences?

45. Consider your journey in learning to read during middle childhood. Were there any particular books or reading experiences that stood out to you? Reflect on how these experiences influenced your love for reading or your academic performance.

46. Think back to when you first started enjoying puns, jokes, or wordplay. How did this new understanding of humor influence your relationships with friends or family? Reflect on how this development in language skills contributed to your social interactions during middle childhood.

47. If you were raised in a multilingual environment, how did switching between languages affect your daily interactions? If you were monolingual, reflect on how learning a second language in school might have changed your perspective on communication and cultural understanding.

Essay Questions

48. Analyze the importance of nutrition, sleep, and physical activity for children in middle childhood. What are the potential consequences of neglecting these health needs, and how can parents and schools help to promote healthy habits?

49. Explore the relationship between socioeconomic status (SES) and physical development during middle childhood. How does SES influence children's health outcomes, and what measures can be taken to reduce health disparities?

50. From the perspective of an elementary school teacher, discuss the strategies you would implement to improve students' organization, memorization, and study skills. How do these strategies align with the cognitive abilities and limitations of children in middle childhood?

51. Describe different theories of intelligence by applying them to this scenario:

> Jamal excels in academics and usually scores very high on traditional standardized tests. However, he is known to be a silly kid who frequently forgets his lunch, gets lost in the halls, and often does not remember to bring in assignments. Jamal's friend, Harry, struggles in his academic coursework and with standardized tests, but is a very creative thinker, a brilliant pianist, dancer, and artist, and has won several awards for his performances. He has many friends and is well-liked by his peers.

Apply Howard Gardner's theory of multiple intelligences, Robert Sternberg's triarchic theory, and Charles Spearman's notion of general intelligence (g) to explain the strengths and challenges of both Jamal and Harry.

52. As a fourth grade teacher, you strive to create a classroom environment that balances both formal and informal learning to support your students' cognitive development. Describe how you incorporate different teaching strategies and environments, including formal classroom instruction, student-centered learning, extracurricular activities, and the hidden curriculum. Provide examples from your teaching practice to illustrate how each environment contributes to student learning.

53. As a school counselor, you play a crucial role in advocating for the diverse needs of students with different abilities. Discuss the challenges that students with learning disabilities and ADHD face in the school environment and explain how schools can respond to these challenges through Individualized Education Programs (IEPs), inclusion strategies, and classroom accommodations. Use case studies or examples from

your counseling experience to highlight the importance of inclusive education.

54. Analyze the benefits and challenges of multilingualism in middle childhood. How does being multilingual influence cognitive development, social interactions, and academic performance? Discuss the role of schools in supporting multilingual children.

Social and Emotional Development in Middle Childhood (Ages 7 to 12)

8

FIGURE 8.1 Middle childhood is an important time of growth in understanding and developing one's identity. Contexts such as peers and school play a significant role as children grow through this life stage. (credit: modification of work "Family photo" by "donita"/nappy, Public Domain)

CHAPTER OUTLINE

8.1 Identity, Self-Concept, and Self-Esteem in Middle Childhood
8.2 Emotional Development and Socioemotional Learning in Middle Childhood
8.3 Social Contexts: Peers, Family, and Media in Middle Childhood
8.4 Context: School and Extracurricular Activities in Middle Childhood
8.5 Atypical Development and Interventions in Middle Childhood

WHAT DOES PSYCHOLOGY SAY? Andre and his older brother Omar recently moved to Boston from Brazil, and it has been an exciting yet overwhelming experience for them. Although Andre still considers himself Brazilian, he now is expected to swear allegiance to the U.S. flag at the start of the school day. Omar is discovering that how people greet each other is quite different in the United States. In Brazil, children address teachers as "Tio" or "Tia" and use their first name. In the United States, children are expected to be more distant and respectful toward adults outside of the family.

Andre has pushed himself into his schoolwork and is trying to catch up. While he speaks English and Portuguese, he is struggling to read assignments in English, and this has made him quieter than usual at school. He used to have many friends, but now he has a harder time connecting with peers. Omar is less worried about school and spends most of his time talking and joking, even if the teacher asks him to stop. He just finds school so exciting, with all the social activities and new experiences, and after school he is always playing with new friends at the park.

Andre and Omar's parents have recently met with the school principal to discuss how the boys are adjusting. They've been advised to be patient because Andre and Omar are adapting to a new culture in addition to a new school. The staff are encouraged that Omar seems to have found a group of other kids to play soccer with on the playground. The school counselor believes that Andre will begin making friends once he feels more confident with the social and cultural etiquette and learns more of the regional English slang popular among the middle school age group. For now, she recommends that both Andre and Omar join a local peer mentoring group to help with social and emotional skills while continuing to take their regular classes. The principal explained that because the schoolteachers and staff have training in cultural inclusivity and socioemotional development, the boys will have support to improve their social skills and adjust quickly. Although their parents believe this to be true and have already seen progress, they wonder:

- Will an increase in confidence make it easier to make friends?
- Will Omar and Andre lose their Brazilian identity as they become immersed in a new culture?
- How much do teachers or peers influence social and emotional development?
- What help will the boys receive from peer mentoring groups and other school programs?

In this chapter, you will learn about the significant social and emotional milestones and dilemmas faced as children in middle childhood, ages seven to twelve years, progress through development.

8.1 Identity, Self-Concept, and Self-Esteem in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the features of Erikson's industry versus inferiority challenge
- Discuss self-efficacy and self-esteem as they relate to personality development
- Describe gender identity and role development in middle childhood
- Describe racial and ethnic identity development in middle childhood

Patrick is nine years old and in fourth grade. He's having a hard time this year because the other kids are taller and better at sports than he is. Other kids tease and call him names because he is small, and when the class photo is taken, Patrick is embarrassed to be selected for the front row with the shortest kids in the class. Physical education (PE) class is becoming a time of panic for Patrick. Team sports are difficult, especially basketball. The only thing worse than PE would be changing in the locker room with the other boys, as Patrick's older brother in middle school does. Patrick feels tiny and weak and wishes he could avoid PE days all together. Outside school, Patrick has been spending his time with his cousins Jesus and Sarah. They enjoy doing the same things Patrick enjoys, namely, playing board games and video games. They're all excited to participate in Patrick's first ever Dungeons & Dragons campaign. He would like to just be himself at school, as he is around his cousins. But he worries that this would bring more comments about his size.

Middle childhood is a time of dramatic changes in the understanding of the self. As children work toward becoming more independent, they gain important skills and develop increasingly important relationships with peers. These activities provide children with a better understanding of their personal strengths and weaknesses as well as information about who they are as individuals. At this stage, children navigate social environments and their growing sense of self, including self-esteem, social comparisons, and gender development.

Psychosocial Theory of Development: Industry versus Inferiority

Recall that Erik Erikson believed personality develops through eight stages from infancy through adulthood (Erikson, 1959, 1968, 1985). During each stage, an individual faces some type of psychosocial dilemma that can help or hinder personality development, depending on how the dilemma is managed. During middle childhood, children are moving out of the initiative versus guilt stage, during which they began to assert themselves in social interactions and in play. Successful navigation of this stage provides a strong foundation for the fourth stage of Erikson's stage of psychosocial development, **industry versus inferiority**, when

children construct their sense of success and accomplishment in work tasks.

According to Erikson, this stage takes place between the ages of approximately six and eleven years, when children are rapidly developing new abilities. Industry refers to the ability to work hard and achieve goals. Children are becoming increasingly independent and work hard to develop a sense of competence in areas such as athletics, music, social relationships, and academics. They compare their skills and achievements to those of their peers, who they now spend more time both in and out of school than before. They may learn they are better at some things than other children, and that some skills and talents are more valued than others. If they feel they can master their skills and are encouraged in their efforts, they develop a sense of industry. If they don't have much success in their efforts, they may develop a sense of inferiority, feeling they are not good enough at something.

Children are also now learning important emotional and social skills. Those who are proficient in their interactions with peers or feel they have valuable talents will develop pride in their abilities and develop self-confidence (Triwiratman et al., 2023). A child who feels they are not as competent as other children may develop feelings of inadequacy. At home, children can contribute to their household while completing chores and other family responsibilities. This opportunity helps develop important life skills, and positive feedback from parents and other family members can reinforce their sense of competence in their abilities. Erikson's theory is one of the few to consider various cultural and contextual factors in identity development (Syed & Fish, 2018). Some research indicates middle childhood's focus on industry can be fostered in a variety of settings including through home environments and household work, school and peer interactions, in in more agricultural cultures through community farming work (Döring et al., 2015).

As children enter formalized education in elementary school, they face new expectations for performance, achievement, and evaluation. Meeting or exceeding these expectations becomes a central focus for many, and their days revolve around school and school events. A school's culture can heavily shape a child's identity. A child who learns to read and write, master math concepts, and independently complete tasks at school will feel competent and industrious. Supportive learning environments, appropriate levels of challenge, and reasonable expectations can help facilitate a sense of industriousness. For example, when children feel supported by their parents, they are more likely to have high self-esteem and improved academic performance (Wang et al., 2021). Children who build a sense of industry will take pride in their accomplishments and develop an identity as a contributing member of their community, whether it be schoolwork or other community work (Batra, 2013).

In comparison, children who are labeled problem students, who display disruptive behavior, or who struggle with the expectations of formal education may develop a sense of inferiority. Having such feelings is related to social anxiety and fear of negative evaluations (Li et al., 2023). Early identity struggles and low self-esteem can also develop in children who experience trauma at school or at home (Downey & Crummy, 2022), and in children who have undiagnosed learning disabilities, attention deficits, or emotional disturbances (Zuppardo et al., 2023). Children with a sense of inferiority may dislike school, disengage from learning activities, and consider themselves poor learners. This result, in turn, can have long-term consequences on their learning and educational achievement, self-concept, and even peer relationships (McArthur et al., 2020; Zheng et al., 2020).

However, children who struggle with one of Erikson's stages initially can later conquer the stage. In other words, children with a sense of inferiority may achieve industry later in their development, particularly when provided with good social and community supports (Zock, 2018). This can be accomplished through schools and extracurriculars that promote a sense of competence and encourage the unique talents of children who are at risk or are struggling with their psychosocial development (Cross & Cross, 2017). Whether during middle childhood or later, when adults encourage children's efforts on challenging tasks, children are likely to have increased feelings of industry.

The Developing Self

During middle childhood, children's self-concept, or their beliefs about their abilities, characteristics, and personality, changes dramatically. Their sense of self is influenced by peers and family members as well as by societal messages that they receive, such as through the media (Collins & Madsen, 2019). Children in middle childhood become hyperaware of themselves and the way others perceive them. Starting in the early elementary grades, they notice the way classmates and other children react to them, and they begin to reflect on and monitor their self-projection, or the way they are portraying themselves around different audiences such as new classmates, close friends, teachers, parents, and other family members (Howe et al., 2022). A child may be more polite and restrained around potential new friends—for instance, funnier and more outgoing around already-close friends, yet serious and intellectual around teachers, and more emotional and dependent around parents. Achieving this requires a sophisticated level of **social competence**, a skill we use to understand and respond to the differing expectations of various contexts and audiences.

By middle childhood, the sense of self is more realistic than it was during early childhood. In researcher Susan Harter's Self-Perception Profile, children in middle childhood pick options that apply to themselves and that measure global self-worth. The scale consists of five subscales: scholastic achievement, athletic ability, social competence, physical appearance, and behavioral conduct (Harter, 2012). While a four-year-old child will not be able to discriminate between who they want to be (their ideal self) and who they actually are (Harter, 2015), by middle childhood, a child can more accurately identify their strengths and weaknesses.

In addition, a more complex self-concept has emerged. While in early childhood, self-descriptions tend to be focused on physical characteristics and might include the child's hair color, gender, and age, by middle childhood, self-concept is increasingly abstract, multifaceted, and evaluative. Specifically, children in middle childhood start to move from thinking in concrete terms ("I have brown hair") to more abstract qualities ("I am a good friend"; "I'm persistent"). They begin to understand and describe themselves using internal characteristics and psychological traits. They now start to consider their hobbies and interests—whether a genre of music, sports, or art activities—as part of their self-concept (Figure 8.2). They also include personality characteristics, such as funny, kind, smart, quiet, or brave. Finally they might consider their own abilities such as proclaiming themselves to be good at gymnastics, bad at writing, and/or okay at math. This rich development in self-concept continues into adolescence.

(a) (b)

FIGURE 8.2 Hobbies and interests are one important way children develop self-concept. These children are engaging in peer interactions and developing self-concept through (a) a role-play gaming group and (b) a band performance. (credit a: "Dungeons and Dragons" by Diana Riser and Daphne Safrit/Flickr, CC BY 4.0; credit b: modification of work "Middle School Chorus and combined Band performance" by USAG- Humphreys/Flickr, CC BY 2.0)

At the same time, children are appraising and judging the actions of others. In elementary school, they begin to perform intense social comparisons with classmates and become highly proficient at identifying the skills,

personalities, and attributes of their peers. Children use these social comparisons to evaluate whether they are superior, inferior, or average compared to their classmates on a variety of dimensions, but particularly academic ability, athletic ability, and social status. Children with higher self-esteem are likely to evaluate themselves more positively in these areas (Orth & Robins, 2022). Recall from 6.1 Social and Emotional Development in Early Childhood that self-esteem is an individual's subjective evaluation of their self, and although it is based on a child's self-concept, it differs from self-concept in that it includes positive or negative feelings about the self-evaluation. If self-concept differs enough from ideal self—the self we consider ideal and hope to be—then self-esteem will be lower. The better the two are matched, the higher our self-esteem (Figure 8.3).

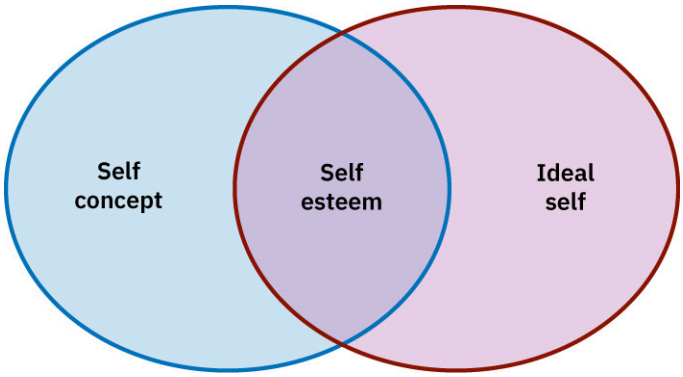


FIGURE 8.3 Self-esteem is influenced and shaped by comparing our ideal self to how we actually evaluate ourselves, or our self-concept. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Self-esteem generally tends to increase throughout middle childhood but may decrease slightly as children approach adolescence before increasing again during adulthood (Ogihara & Kusumi, 2020; Robins et al., 2002). This is likely because children are becoming better able to evaluate themselves through social comparisons. For example, they may realize that they are not actually the fastest runner in the world. Self-esteem is also influenced by the early experiences a child has with caregivers and other adults. Those whose caregivers are high in warmth and supportive are more likely to have higher self-esteem (Brummelman & Sedikides., 2020; Orth & Robins, 2019).

Psychologists distinguish, however, between self-esteem and narcissism. According to Brummelman and Sedikides (2020), narcissism is an exaggerated sense of importance or superiority including an unrealistic idea of self and may emerge when caregivers overpraise children or focus on social comparisons to other children. They assert that self-esteem decreases when parents overpraise their children. Instead, caregivers should focus on providing realistic feedback, help children focus on personal growth rather than on performing better than others, and provide unconditional warmth and acceptance that is not dependent on achievements (Brummelman & Sedikides, 2020).

LINK TO LEARNING

Positive self-esteem is associated with academic performance and better mental health. Watch Self-Esteem For Kids—10 Ways To Build Self-Esteem & Self-Confidence (https://openstax.org/r/104KidSelfEstm) to learn about self-esteem and some tips on how to help children build their self-esteem.

Another characteristic related to self-concept is self-efficacy, an individual's beliefs about their ability to effectively complete a task that will allow them to achieve a goal (Bandura, 1977). Self-efficacy is not about a child's abilities but rather their beliefs about what they can achieve with those abilities. For example, a child may have strong academic self-efficacy, meaning they believe they can be successful in a school environment. Other children may have self-efficacy related to social relationships or their problem-solving or athletic abilities. In general, higher self-efficacy is related to better outcomes. For example, children who have high

self-efficacy about their ability to successfully complete mathematics have better mathematical achievement (Kaskens et al., 2020).

Although self-efficacy may seem similar to self-esteem, the distinction between them is important. Self-esteem describes how much value a child places on themselves as a worthy individual, while self-efficacy is their belief in their ability to work effectively and achieve in various areas (academics, sports, the arts, relationships, etc.) of their lives. Notably, self-efficacy influences self-esteem (Han & Park, 2020). For example, a child who believes they can be successful in school (high academic self-efficacy) is more likely to work hard to be successful. That achievement can then increase self-esteem, but only if performing well academically is important to the child. In other words, children's self-esteem is most positively impacted by achieving success in the areas that are important to them.

The dramatic changes happening in the development of self-concept during middle childhood provide a unique opportunity for caregivers to help children develop positive self-esteem and self-efficacy by providing warmth, support, realistic and constructive feedback, and an emphasis on growth rather than achievements.

LIFE HACKS

Measuring Your Self-Esteem and Self-Efficacy

Self-esteem and self-efficacy are subjective concepts, meaning they are about the way you view yourself, not so much about the way others view you. This makes both characteristics easy to measure through self-reports. For example, you can find a General Self-Efficacy Scale calculator (https://openstax.org/r/104SelfEffScale) to measure your self-efficacy and the Rosenberg Self-Esteem scale (https://openstax.org/r/104RosnbrgScale) to measure your self-esteem (Rosenberg, 1965; Schwarzer & Jerusalem, 1995). Once you have taken both scales and calculated your scores, consider how they are similar and different.

Based on what you've learned from these tools, what are some strategies you can use to increase your self-esteem and self-efficacy? Start by identifying the things you're good at. What are some of the achievements of which you are most proud? What are your strengths and abilities? Do you think there are ways that improving self-efficacy may be more useful than raising self-esteem?

When you catch yourself thinking negative thoughts about yourself, make an effort to think about some of the strengths and achievements you've just identified. Set goals for yourself, and celebrate the small successes. You don't need to wait for the big goals to celebrate. For example, instead of focusing solely on your overall class grade, take the time to enjoy the high score you received on a test after studying hard for it. If you do make a mistake, forgive yourself—we all make mistakes. Strive to look toward your next goal.

Gender, Racial, and Ethnic Identity

Gender, race, and ethnicity are major social categories that influence the way children see themselves as well as the way others see them. The important developments that occur during this period are central influences on a child's overall identity and other aspects of development.

Gender Identity in Middle Childhood

As you've learned, sex and gender are different concepts, and the sex assigned to a child at birth can differ from the gender identity that develops over the course of childhood. Although children can typically accurately identify their sex assigned at birth (e.g., male or female) by eighteen months to three years of age, middle childhood allows them to begin understanding nuances of gender, due in part to their expanding social world. Gender is socially constructed and is influenced by cultural beliefs. For example, in the United States and many other societies, gender inequality is present in cultural beliefs and stereotypes of males and females, with females being stereotyped as inferior. These cultural beliefs can influence child development in ways that are harmful or constraining (Rogers, 2020). For example, a child may struggle with self-esteem and feelings of

worth if they believe these gender norms and that they don't fit into the stereotype. However, when children develop beliefs that gender is not that important or that genders are equal, they may form a healthier gender identity and overall self-concept (Rogers, 2020; Rogers & Way, 2021).

During middle childhood, children have a well-developed understanding of gender norm expectations (Rogers & Meltzoff, 2017) learned from caregivers, peers, teachers, and the media. They can reinforce gender norms, such as when they make a statement like, "Boys are better at math than girls," or challenge them, "Anyone can become a nurse or a doctor" (Rogers, 2020). Children develop their own gender identity as they consider which gender norms they will reinforce and those they will challenge. In other words, during middle childhood, children become less focused on the rules of gender expression and start to understand that gender stereotypes are just stereotypes.

Children tend to be most rigid about gender stereotypes in early childhood (around five to six years of age), but beginning in middle childhood (around ages seven to eight years), they become much more flexible in their gender beliefs and identity (Trautner et al., 2005). They often become less judgmental toward gender-nonconforming peers, aided by a growing neurological maturity that allows them to understand exceptions and individuality. Their own self-concept is becoming more complex too, so children can increasingly recognize how complex others can be.

Racial Identity in Middle Childhood

As self-concepts become increasingly complex during middle childhood, racial and ethnic identities develop (Corenblum, 2014). Racial identity is the sense of self gleaned from an individual's racial background, and for children it typically includes physical appearance, language, and sense of pride (Rogers et al., 2012). Racial identity begins to develop during infancy and continues through adulthood (Williams et al., 2020).

In the United States 2020 census, more than 30 percent of children identify as multiracial, while many others identify as members of at least one racial minority group (Rico et al., 2023). At five to six years of age, children can accurately use societal labels about skin color to describe others (Black, White), and by the age of ten years, children of color in particular are able to describe racial stereotypes that affect their racial identity (Swanson et al., 2009). Similar to gender identity, when children form their own racial identity focused more on equality and personal identity than race stereotypes, they are more likely to thrive (Rogers & Way, 2021). For example, research on racial identity indicates that when formation of healthy racial identities focused on celebrating an individual's uniqueness and/or valuing equality, the individual is better able to navigate negative stereotypes and have a healthier overall identity (Rogers et al., 2021). Peers, particularly having friends of the same race, and a child's school environment are especially influential in the development of racial identity in school-aged children (Jugert et al., 2020).

Ethnic Identity in Middle Childhood

Ethnic identity is the part of a child's sense of self based on their ethnic heritage. To develop this identity, children need to be able to identify themselves as a member of a particular social group, which most children can do in early childhood (Corenblum, 2014). At three to five years of age, they focus on physical features such as skin color when considering ethnicity (Rogers et al., 2012). However, by middle childhood, children are focusing on behavioral and cultural aspects, such as language and ancestry. In fact, eight-year-old children describe physical appearance, culture, and group pride as important elements of ethnic identity—the same elements that adolescents mention (Rogers et al., 2012).

Specific aspects of ethnic identity differ among ethnic groups. For example, Puerto Rican children describe the importance of cultural events and their pride in being Puerto Rican, while Chinese American children focus on language as an important aspect of their ethnic identity (Way et al., 2008). Ethnic identity is also complex for immigrant children. They learn about their first (ethnic) culture while simultaneously learning about and adapting to their new culture. In other words, they are developing an ethnic identity and a national identity. The importance they place on these identities may be apparent in the label that they use to describe their

ethnicity—"Mexican" or "Mexican American," for example (Brown, 2017).

Although we can think about gender, racial, and ethnic identities separately, children often have multiple social identities, which they may value differently. For example, Portuguese immigrant children rate their gender identity as more important than their ethnic identity, while Cambodian and Dominican immigrant children rate their ethnic identity as more important (Akiba et al., 2004; Turner & Brown, 2007). Ethnic identity strengthens during middle childhood. For example, Corenblum (2014)[1] reports that by age eleven years, First-Nation Canadian children describe their ethnic identity as more important than any other social identities (such as gender) except family. Children who have immigrated to a new country often experience some level of stress as they try to balance multiple cultural and/or national identities, but often through development they are able to form their own unique and multifaceted cultural identity (Juang & Syed, 2019).

References

Akiba, D., Szalacha, L. A., & García Coll, C. T. (2004). Multiplicity of ethnic identification during middle childhood: Conceptual and methodological considerations. *New Directions for Child and Adolescent Development, 2004*(104), 45–60. https://doi.org/10.1002/cd.103

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Batra, S. (2013). The psychosocial development of children: Implications for education and society—Erik Erikson in context. *Contemporary Education Dialogue, 10*(2), 249–278. https://doi.org/10.1177/0973184913485014

Brown, C. S. (2017). School context influences the ethnic identity development of immigrant children in middle childhood. *Social Development, 26*(4), 797–812. https://doi.org/10.1111/sode.12240

Brummelman, E., & Sedikides, C. (2020). Raising children with high self-esteem (but not narcissism). *Child Development Perspectives, 14*(2), 83–89. https://doi.org/10.1111/cdep.12362

Collins, W. A., & Madsen, S. D. (2019). Parenting during middle childhood. In *Handbook of Parenting* (pp. 81–110). Routledge. https://doi.org/10.4324/9780429440847-3

Corenblum, B. (2014). Development of racial–ethnic identity among First Nation children. *Journal of Youth and Adolescence, 43*, 356–374. https://doi.org/10.1007/s10964-013-0007-5

Döring, A. K., Schwartz, S. H., Cieciuch, J., Groenen, P. J., Glatzel, V., Harasimczuk, J., Janowicz, N., Nyagolova, M., Scheefer, E. R., Allritz, M., Milfont, T. L., & Bilsky, W. (2015). Cross–cultural evidence of value structures and priorities in childhood. *British Journal of Psychology, 106*(4), 675–699. https://doi.org/10.1111/bjop.12116

Downey, C., & Crummy, A. (2022). The impact of childhood trauma on children's wellbeing and adult behavior. *European Journal of Trauma & Dissociation, 6*(1), Article 100237. https://doi.org/10.1016/j.ejtd.2021.100237

Erikson, E. (1959). Theory of identity development. In *E. Erikson, Identity and the Life Cycle.*

Erikson, E. H. (1968). *Identity: Youth and crisis.* New York, NY: Norton.

Erikson, E. H. (1985). *Childhood and society: 35th anniversary edition.* New York, NY: Norton.

Han, H. Y., & Park, S. G. (2020). A study on the correlations of self–esteem, self–efficacy, and learning motivations of underachieving elementary school students. *Asia–Pacific Journal of Convergent Research Interchange, FuCoS, 6*(8), 79–89. https://doi.org/10.47116/apjcri.2020.08.08

Harter, S. (2012) *Self Perception Profile for Children: Manual and Questionnaires* (Grades 3–8). https://www.apa.org/obesity-guideline/self-preception.pdf

Harter, S. (2015). *The construction of the self: Developmental and sociocultural foundations.* Guilford Publications. https://psycnet.apa.org/record/2012-12728-000

Howe, N., Paine, A. L., Ross, H. S., & Recchia, H. (2022). Sibling relations in early and middle childhood. *The Wiley-Blackwell Handbook of Childhood Social Development*, 443–458. https://doi.org/10.1002/9781444390933.ch19

Juang, L. P., & Syed, M. (2019). The evolution of acculturation and development models for understanding immigrant children and youth adjustment. *Child Development Perspectives, 13*(4), 241–246. https://doi.org/10.1111/cdep.12346

Jugert, P., Pink, S., Fleischmann, F., & Leszczensky, L. (2020). Changes in Turkish–and resettler–origin adolescents' acculturation profiles of identification: A three–year longitudinal study from Germany. *Journal of Youth and Adolescence, 49*, 2476–2494. https://doi.org/10.1007/s10964-020-01250-w

Kaskens, J., Segers, E., Goei, S. L., van Luit, J. E., & Verhoeven, L. (2020). Impact of Children's math self–concept, math self–efficacy, math anxiety, and teacher competencies on math development. *Teaching and Teacher Education, 94*, Article 103096. https://doi.org/10.1016/j.tate.2020.103096

Li, J., Jia, S., Wang, L., Zhang, M., & Chen, S. (2023). Relationships among inferiority feelings, fear of negative evaluation, and social anxiety in Chinese junior high school students. *Frontiers in Psychology, 13,* Article 1015477. https://doi.org/10.3389/fpsyg.2022.1015477

McArthur, G. M., Filardi, N., Francis, D. A., Boyes, M. E., & Badcock, N. A. (2020). Self–concept in poor readers: A systematic review and meta–analysis. *PeerJ, 8*, Article e8772. https://doi.org/10.7717/peerj.8772

Ogihara, Y., & Kusumi, T. (2020). The developmental trajectory of self–esteem across the life span in Japan: age differences in scores on the Rosenberg self–esteem scale from adolescence to old age. *Frontiers in Public Health, 8*, 132. https://doi.org/10.3389/fpubh.2020.00132

Orth, U., & Robins, R. W. (2019). Development of self–esteem across the lifespan. In D. P. McAdams, R. L. Shiner, & J. L. Tackett (Eds.), *Handbook of Personality Development* (pp. 328–344). The Guilford Press. https://psycnet.apa.org/record/2018-63285-019

Orth, U., & Robins, R. W. (2022). Is high self-esteem beneficial? Revisiting a classic question. *American Psychologist, 77*(1), 5–17. https://doi.org/10.1037/amp0000922

Rico, B., Jacobs, P., & Coritz, A. (2023). 2020 census shows increase in multiracial population in all age categories. https://www.census.gov/library/stories/2023/06/nearly-a-third-reporting-two-or-more-races-under-18-in-2020.html

Rogers, L. O. (2020). "I'm kind of a feminist": Using master narratives to analyze gender identity in middle childhood. *Child Development, 91*(1), 179–196. https://doi.org/10.1111/cdev.13142

Rogers, L. O., & Meltzoff, A. N. (2017). Is gender more important and meaningful than race? An analysis of racial and gender identity among Black, White, and mixed-race children. *Cultural Diversity & Ethnic Minority Psychology, 23*(3), 323–334. https://doi.org/10.1037/cdp0000125

Rogers, L. O., & Way, N. (2021). Child development in an ideological context: Through the lens of resistance and accommodation. *Child Development Perspectives, 15*(4), 242–248. https://doi.org/10.1111/cdep.12433

Rogers, L. O., Moffitt, U., & Foo, C. (2021). "Martin Luther King fixed it": Children making sense of racial identity in a colorblind society. *Child Development, 92*(5), 1817–1835. https://doi.org/10.1111/cdev.13628

Rogers, L. O., Zosuls, K. M., Halim, M. L., Ruble, D., Hughes, D., & Fuligni, A. (2012). Meaning making in middle childhood: An exploration of the meaning of ethnic identity. *Cultural Diversity and Ethnic Minority Psychology, 18*(2), 99–108. https://doi.org/10.1037/a0027691

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: Princeton University Press. Retrieved from https://fetzer.org/sites/default/files/images/stories/pdf/selfmeasures/Self_Measures_for_Self-Esteem_ROSENBERG_SELF-ESTEEM.pdf

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self–Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Windsor, UK: NFER-NELSON. https://psycnet.apa.org/doi/10.1037/t00393-000

Swanson, D. P., Cunningham, M., Youngblood, J., & Spencer, M. B. (2009). Racial identity development during childhood. *Handbook of African American psychology*, 269–281. https://psycnet.apa.org/record/2009-01281-020

Syed, M., & Fish, J. (2018). Revisiting Erik Erikson's legacy on culture, race, and ethnicity. *Identity, 18*(4), 274–283. https://doi.org/10.1080/15283488.2018.1523729

Trautner, H. M., Ruble, D. N., Cyphers, L., Kirsten, B., Behrendt, R., & Hartman, P. (2005). Rigidity and flexibility of gender stereotypes in children: developmental or differential? *Infant and Child Development, (14)*4, 365–80. https://doi.org/10.1002/icd.399

Triwiratman, A., Nusantara, T., & Hitipeuw, I. (2023). Level of Learning Independence in Elementary School Students: The Influence of Self-Efficacy, Motivation, and Peer Interaction. *Didaktika: Jurnal Kependidikan, 12*(4), 705–718. https://doi.org/10.58230/27454312.305

Turner, K. L., & Brown, C. S. (2007). The centrality of gender and ethnic identities across individuals and contexts. *Social Development, 16*(4), 700–719. https://doi.org/10.1111/j.1467-9507.2007.00403.x

1 This study (Corenblum, 2014) uses the terms "Native Canadian" and "First Nation."

Wang, Y., Huebner, E. S., & Tian, L. (2021). Parent–child cohesion, self-esteem, and academic achievement: The longitudinal relations among elementary school students. *Learning and Instruction*, *73*, Article 101467. https://doi.org/10.1016/j.learninstruc.2021.101467
Way, N., Santos, C., Niwa, E., & Kim–Gervey, C. (2008). To be or not to be: An exploration of ethnic identity development in context. *New Directions for Child and Adolescent Development. 120,* 61–79. https://doi.org/10.1002/cd.216
Williams, C. D., Byrd, C. M., Quintana, S. M., Anicama, C., Kiang, L., Umaña–Taylor, A. J., Calzada, E. J., Pabón Gautier, M., Ejesi, K., Tuitt, N.R., Martinez–Fuentes, S. White, L., Marks, A., Rogers, L. O., & Whitesell, N. (2020). A lifespan model of ethnic–racial identity. *Research in Human Development*, *17*(2–3), 99–129. https://doi.org/10.1080/15427609.2020.1831882
Zheng, L. R., Atherton, O. E., Trzesniewski, K., & Robins, R. W. (2020). Are self–esteem and academic achievement reciprocally related? Findings from a longitudinal study of Mexican–origin youth. *Journal of Personality*, *88*(6), 1058–1074. https://doi.org/10.1111/jopy.12550
Zock, H. (2018). Human development and pastoral care in a postmodern age: Donald Capps, Erik H. Erikson, and beyond. *Journal of Religion and Health*, *57*(2), 437–450. https://doi.org/10.1007/s10943-017-0483-0
Zuppardo, L., Serrano, F., Pirrone, C., & Rodriguez–Fuentes, A. (2023). More than words: Anxiety, self–esteem, and behavioral problems in children and adolescents with dyslexia. *Learning Disability Quarterly*, *46*(2), 77–91. https://doi.org/10.1177/07319487211041103

8.2 Emotional Development and Socioemotional Learning in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Discuss the developing social skills of children in middle childhood
- Describe developmental achievements in emotional regulation
- Describe developmental achievements in social cognition and moral reasoning

Chandra's parents need to meet with her teacher again. This time, it's about an emotional outburst that happened during class. When she was supposed to be writing the names of state capitals on a test, she became frustrated. Her teacher watched as she crumpled her test, mumbled something about a waste of time, and then with tears in her eyes pushed everything off her desk. When her pencils and water bottle hit the floor, she let out a scream and stormed off to the corner of the room to calm down.

Chandra knows what she did was inappropriate. But lately she's been having strong feelings, sometimes so strong that she becomes easily frustrated and overwhelmed. And even though her stepmom says it was Chandra's responsibility to prepare for the test, she doesn't feel the same way. Inside, Chandra feels frustrated that her teacher, her school, and the world seem to be making unrealistic demands.

Developing Socially in Middle Childhood

Middle childhood is often called the school-aged years because children in the United States commonly attend elementary grades one through six between the ages of six and twelve years. A typical week of school is about thirty-three hours, and on average, children attend 180 days per year (National Center for Education Statistics [NCES], 2017). Elementary school affords many new social opportunities but also makes emotional demands. School-aged children have to complete tasks like solving math problems on the whiteboard, giving short presentations, and reading out loud in front of peers. There's not much chance to take a break or stay away from others. These new social experiences affect the way they manage their emotions and develop social skills. In this section, you'll learn about emotional development in middle childhood, along with coping strategies of self-regulation and the social cognition skills that grow during this age.

Emotional Intelligence and Regulation

As you've learned 6.1 Social and Emotional Development in Early Childhood, emotional intelligence is the ability to monitor and manage your own emotions and respond to the emotions of others (Salovey & Mayer, 1990). Children with higher emotional intelligence have better attention skills, school engagement, and social relationships (Pauletto et al., 2021).

Emotional regulation, or self-regulation, describes the way we respond to events happening in our environment and manage our reactions. For example, Rafi is getting ready to give a short presentation in school. He recognizes that the funny feeling in his stomach mean he is nervous, and he thinks to himself, "I know I can do this!" and "I'm sure that other kids are feeling nervous too!" To distract himself from his nerves, he also takes a few deep breaths to calm himself and thinks about what he will do after school with friends. Rafi is showing that he recognizes his emotions (emotional intelligence) and has skills for managing his response (emotional regulation) to a meaningful challenge in his life.

Useful skills that allow children to have increased emotional intelligence and regulation continue to develop

during middle childhood. For example, metacognitive skill, the awareness of their individual thought processes, allows them to understand their emotions and develop strategies to help them control their reactions. These skills continue to grow in early and middle childhood (Gascoine et al., 2017). However, regulating emotions is complex and requires a lot of skill and practice (Pennequin et al., 2020). So, during middle childhood, children may still struggle to handle their emotions, particularly when they are stressed or feeling overwhelmed by expectations (Moltrecht et al., 2021). For example, although a nine- or ten-year-old may still whine, sulk, or seek their family's help when they are tired and stressed, more often they are practicing how to calm down and breathe deeply (Figure 8.4).

FIGURE 8.4 Children in middle childhood are developing skills that help them understand and regulate their emotions and emotional responses. (credit: "Mother and child yoga" by Lyn Lomasi/Flickr, CC BY 2.0)

Researcher Michael Lewis (2022) discussed the development of secondary emotions that first appear during early childhood. These include other-evaluative emotions like jealousy and compassion, which depend on the development of self-awareness, and self-conscious emotions like pride, guilt, and embarrassment, which are based on our understanding of social rules and conventions (Camras, 2022). In the elementary years, children may begin to feel these emotions more deeply as their cognitive capacity to understand and comprehend social situations increases. For instance, parents can often remedy a five-year-old's jealousy of a younger sibling by giving attention, cuddles, or a distraction. By age nine years, a child who feels jealousy because their best friend is playing with another may experience a persistent, intense emotion sustained over hours, days, or weeks. They may reflect on this jealousy even when they are in other environments, so distraction does not help. Parents continue to play an important role in helping children process and regulate their emotions in middle childhood (De Raeymaecker & Dhar, 2022).

Increasingly, children begin to consider *how* they express their emotions. As they reflect, ruminate, and communicate their emotions in a more mature way, they also begin to self-regulate more independently (Lane & Smith, 2021).

Emotional Awareness

A valuable element of self-regulation is emotional awareness, being able to name and identify emotions (Lane & Smith, 2021). Emotional awareness depends on our ability to understand internal sensations and connect them to an emotion based on the current situation as well as past experiences (Satpute & Lindquist, 2019). Being upset, irritable, or grumpy without knowing why you feel that way can be a bewildering and overwhelming experience, but naming and identifying emotions allows children to better understand their internal state and decide how best to manage their emotional responses. Emotional awareness and coping techniques develop substantially in childhood, but our ability to understand our emotions and cope with our emotions continues to develop and influences our well-being across the lifespan (De France & Hollenstein, 2019).

Coping Techniques

Children develop several **coping strategies** as a set of techniques for overcoming stress, a major step in achieving self-regulation. Stressors that affect any social group regardless of culture or gender are transcultural stressors (Kim et al., 2018), such as family economic stress and lack of family cohesion. People of color or the children of immigrants may experience culture-specific stressors, such as learning a new language or facing discrimination. These may require unique coping strategies such as developing a new cultural identity that combines elements of multiple cultural groups (Nguyen & Benet–Martínez, 2013). In middle childhood, children's coping techniques are shaped by their caregivers and culture.

Coping strategies vary in effectiveness, and some are healthier than others (Table 8.1). The most commonly used coping strategies in middle childhood are problem-solving, distraction, and support seeking (Skinner & Zimmer–Gembeck, 2016). Often, optimal coping strategies differ based on the situation. As children develop improved emotional regulation and coping strategies, they learn to use a varied approach and may improve in their ability to problem solve and take action to cope effectively (Eschenbeck et al., 2018). For example, if a child had a recent conflict with a close friend when they couldn't agree on what to play at recess, they may benefit from a combination of strategies. They might start by telling their teacher they are upset (support seeking), then ask for advice on what to do (information seeking), and then return to their friend with a proposed compromise (problem-solving).

Coping Strategy	Description
Problem-solving	Identifying and using a solution to a problem to resolve the issue
Behavioral and cognitive distraction	Shifting attention away from stress-causing situation
Support seeking	Relying on adults or peers for help with coping
Escape/avoidance	Leaving the stressful environment or avoiding the problem
Cognitive reframing	Trying to think of the problem differently such as focusing on the positive
Self-reliance	Accepting responsibility or otherwise regulating emotions alone
Opposition	Blaming others for problems
Rumination	Thinking about the problem over and over

TABLE 8.1 Common Coping Strategies in Middle Childhood (source: Skinner & Zimmer–Gembeck, 2016)

Negative coping techniques escalate a situation and make it worse, or they are maladaptive and become harmful in the long term. Positive coping techniques are adaptive, helpful, and healthful strategies that will de-escalate a situation. For example, when a sibling takes something without asking, a positive coping technique may be to breathe deeply to calm down, then calmly ask them to give it back or ask a parent for assistance. A child struggling to complete a task in school may try again, try another strategy, ask for help, or take a temporary break. Using positive coping techniques is a lifelong skill and one that helps us develop other positive skills such as communication, conflict resolution, and problem-solving. In middle childhood, children are likely to shift from heavily using their caregivers for coping (support seeking) to using their own improved emotional regulation skills (e.g., self-reliance) and other internal coping techniques (Perry et al., 2020; Skinner & Zimmer–Gembeck, 2007).

Emotional Display Rules

A culture- and context-specific social rule for outwardly showing emotion is known as an **emotional display**

rule. The understanding of display rules emerges during middle childhood as children begin to understand that the emotion a person is experiencing is not necessarily the one they are expressing. By the age of seven years, children can use the emotional expressions of others to determine what these others want and/or believe (Wu & Schulz, 2019). They are also learning to control their own emotional expressions in certain situations. For instance, when children are playing with friends outside, the rules may allow them to squeal, giggle, and exhibit high-energy excitement. At school, however, the rules may require them to be calm, quiet, and attentive. Suppressing strong emotions such as sadness, embarrassment, and fear takes intense focus and self-regulation (Savina, 2021). Children in middle childhood often need to practice these skills to adhere to social display rules in a given setting.

Display rules vary by gender and culture. For example, in some cultures, there are different expectations for the emotions expressed by boys and girls (Chaplin & Aldao, 2013). This can lead to gender differences in emotional expression as children enter middle childhood, such as girls expressing more sadness and boys expressing more anger. In other words, these differences are not seen in infancy, meaning they are likely learned from the cultural environment (Chaplin & Aldao, 2013). Gender differences in emotional expressions are also much more present when children are with peers than when they are with their caregivers (Chaplin & Aldao, 2013). It also shows us that children are still seeking support from their caregivers and may feel more comfortable showing a wider range of emotions when they are in their home environment with parents who provide emotion coaching. For example, a child who has secure attachment with caregivers that use emotion coaching may contain their sadness over a bad test grade until they get home from school.

Social Cognition

Children often base their coping strategies on their level of social cognition, the ability to understand and think about what others are thinking and to engage in prosocial behaviors. Social cognition emerges during childhood and continues to develop in adolescence. Infants and younger children begin to understand that others have intentions, wants, and beliefs that may vary from their own. Skills necessary for social cognition include the ability to do the following:

- identify the emotions of others through facial expressions and body posture
- understand the mental states and perspectives of others, composed of theory of mind and perspective-taking skills
- show empathy, the ability to relate to the feelings of others (Arango–Tobón et al., 2023)

Theoretical Perspectives on Social Cognition

Many theories have considered the way social cognition develops during childhood. One of the most popular is the stage theory of cognitive development, which states that during infancy and early childhood, children are very egocentric and unable to see the world from someone else's perspective (Piaget, 1954). As they move into middle childhood, Piaget believed, children get better at thinking about how others think and why they behave as they do. In other words, children become less egocentric and more capable of considering the perspective of others.

Another element of social cognition is theory of mind. Recall that when children acquire theory of mind, they can consider how the thoughts, feelings, and intentions of others influence their behaviors and differ from their own individual perspective. In other words, having theory of mind allows a child to explain why people do the things that they do. In particular, the development of empathy and of imitation, observing and repeating the behavior of others, supports theory of mind. Theory of mind and perspective-taking skills support better peer relationships and improve children's ability to use reasoning to understand others (Lecce & Devine, 2022). As children develop improved social cognitive skills, such as perspective taking, and improve their use of emotional regulation and positive coping techniques, they are better able to have healthy relationships with friends and family (Figure 8.5). Theory of mind continues to develop into middle childhood and is shaped by our social experiences just as it shapes our social interactions and understanding (Devine & Lecce, 2021).

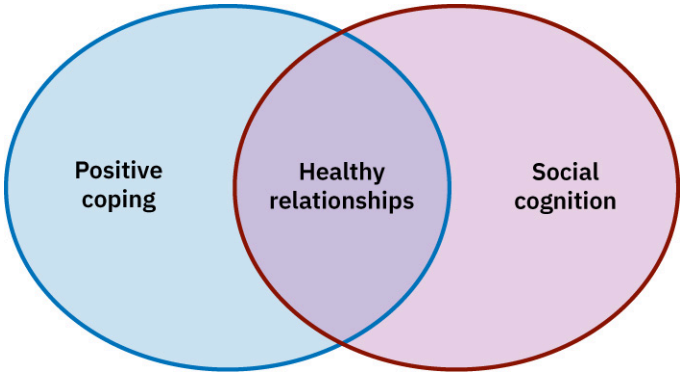


FIGURE 8.5 Positive coping techniques and the development of social cognition both facilitate healthy relationships and social interactions. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Interpreting and Responding to Social Situations

Imagine you are in second grade and on the playground during recess. You see your best friend walking toward you. You wave and say hello, but they walk right past without making eye contact or acknowledging you. Researchers have used scenarios such as this to understand social cognition in children (Dodge et al., 2015). Specifically, scenarios like this help us understand more about how children interpret social situations and the behaviors of others. Children with a negative bias, or hostile attributional error, are more likely to interpret the friend's behavior as an aggressive or purposefully unkind act (Dodge et al., 2015; Gardner et al., 2017). They may judge their best friend as committing an offense and in response would aggressively confront them, blame them, raise their voice, push, or say mean things. This hostile reaction increases a child's risk of unhealthy relationships and conflicts with peers. However, teaching children to have kinder attributions or use perspective taking may help them respond better in similar situations (Bengtsson & Arvidsson, 2011).

Finally, children who have developed positive coping strategies and emotional regulation skills tend to react with better emotional competence and have healthier relationships (Raine et al., 2023). For example, they are more likely to use cognitive reappraisal to cope and consider other factors, such as whether their friend wasn't feeling well, was busy or late, or had just received bad news. When asked for their response, these children are more likely to reach out to their friend in a calm, friendly way to make sure everything is all right. Of course, a child's personality and temperament will also play a role in how children respond to social situations. For example, a quieter, shyer child may be less likely to reach out, whereas an exuberant, outgoing child may be more likely to feel comfortable taking the first step.

IT DEPENDS

Should Adults Intervene with Shy Children?

When caregivers notice that their child is shy, they may worry that it will make it difficult for their child to interact with other children and adults. So, should adults intervene? Do children who are shy need help to develop social skills with peers?

Western parents tend to react to their children's shyness with disappointment and worry, which is not generally the case among Chinese or other Asian parents. Xu and Krieg (2014)[2] point out distinct differences between being anxious and shy, which may be part of their temperament, and learning to display shyness based on the cultural values or context, which may be an adaptive strategy. In their empirical study with fourth and fifth graders, some children of Asian immigrants were adaptively shy and others anxious shy. The outcomes for these children were different in terms of their reported feelings of loneliness, even though their solitary behavior was not that different. Anxious-shy children were also more often socially excluded and experienced more anxious behavior. The less acculturated into U.S. values Asian American parents were, the more they accepted and encouraged regulated shyness in their children.

As this study and many others indicate, shyness might be considered a temperamental condition in the United States, and one that is not valued or encouraged. Even if a child has a shy temperament, it is not necessarily a concern. Many children are shy with adults, but it is less common for children to be shy around children their own age. However, if a child is so shy that they don't interact with their peers, it may be helpful to intervene. Caregivers can schedule play dates and encourage their child to take part in extracurricular activities. They can also give their child helpful hints for ways to interact with other children and then offer positive feedback when they see their child do so. In addition, many schools offer social skills support groups for children. If the shyness persists and seems to be causing the child a great deal of social anxiety, a therapist can help.

Resilience and Positive Coping

Positive coping strategies support resilience, which further aids children in coping with stress and trauma (Twum–Antwi et al., 2020). The ability to successfully adapt and respond to stressful events is **resilience** (Masten, 2019). So, how do we help develop resilience in children?

Positive attachment relationships between a child and at least one caregiver is one critical factor supporting this goal (Thompson et al., 2021). As discussed in 4.4 Social Development in Infants and Toddlers, when attachment security is present, caregivers are responsive and nurturing and focus on the child's protection, emotional regulation, and cognitive stimulation (Berástegui & Pitillas, 2023). Children with a history of a positive child-caregiver relationship are able to express their emotions and have strong emotional regulation (Kural & Kovacs, 2021), both key aspects of positive coping and resilience.

Healthy social relationships and adaptive responses to social interactions are also predictors of resilience. Strong social cognitive skills are essential for developing healthy relationships with others, which in turn matters for making friends, bonding with teachers at school, and spending enjoyable time with family. In middle childhood, children also show improved use of empathy and altruism to facilitate prosocial behaviors (Glen et al., 2020). Cognitively, **empathy** requires understanding the perspective and emotional states of others. Affectively, we need to vicariously feel what others are feeling and mirror their emotion. The awareness of what another might be feeling and the motivation to do something for them is **sympathy**. For instance, saying you are sorry to a friend who lost their toy requires sympathy. But feeling sad along with the friend requires empathy. Empathy and sympathy help to facilitate relationships because they let us take others' perspectives and treat them as we would like to be treated, respond to their emotional needs, and strive to play fair.

A type of prosocial behavior called **altruism** involves acts of kindness even when at a cost. Altruism requires empathy and is associated with theory of mind (Rose et al., 2024), but it takes those cognitive and emotional components and translates them into action. Children in middle childhood display altruism when they help others in a way that is a cost to themselves. Examples include stopping to help someone, inviting a lonely child to play, sharing, taking turns, and teaching others. Children benefit from acting altruistically because it can strengthen friendships and family relationships, make them feel like they belong and are included, and help

2 This study (Xu & Kreig, 2014) uses the terms "Asian," "Asian American," and "Western."

them to develop new skills and abilities (Butovskaya et al., 2020). It is not selfish if despite these benefits it still comes at a cost, such as stopping a game, giving up a toy, or choosing to wait for others.

Children who develop strong prosocial skills are more likely to trust others, to feel confident in themselves, and to feel comfortable working with others. Caregivers can take several steps to promote the development of prosocial skills throughout childhood. In addition to forming the high-quality caregiver-child relationship, they can apply a technique called emotion coaching (Gus et al., 2015). This consists of recognizing a child's emotion, responding to the child with empathy, validating their feelings, and helping them label their emotions (Lisitsa, 2013). Positive coping behaviors, social cognition, and healthy relationships are all adaptive strategies that can promote resilience in middle childhood and across the lifespan.

Moral Reasoning

Moral development is the process by which children learn about the difference between what is right and wrong. Jean Piaget was interested in what children *believe* about moral issues (Carpendale, 2000), in other words, their moral reasoning rather than moral behaviors. He felt that a child's moral reasoning was very closely tied to their cognitive development, and that this reasoning could not become more sophisticated until children were cognitively mature enough to consider the perspectives of others.

Piaget used short stories, or vignettes, to learn more about how children think about what is right or wrong. For example, the stories might entail one child breaking a cup while sneaking a cookie while another child breaks multiple cups by accident. After telling the story, Piaget asked children whether they thought the child was right or wrong and why. Based on his research, Piaget (1932) described stages of moral reasoning. In the first stage, in children under age five years, they have not yet learned morals. In the second stage, demonstrated by children between the ages of five and ten years, their morality is forming, and children follow rules and authority without any flexibility (Helwig & Turiel, 2002). Thus, they might believe the child who broke the cup was wrong regardless of if it was an accident or not. In Piaget's third stage of moral development, starting around age eleven years, children become more adult in their moral perspective. They are more likely to be flexible in their thinking, considering the moral situation and the perspectives of others. They are now capable of understanding why rules might be beneficial to everyone and begin to value cooperation and mutual respect (Helwig & Turiel, 2002). They also understand that rules are flexible and are quick to tell you if they think a rule is unfair. For example, they may say a child who broke multiple cups should not be punished if it was an accident.

Lawrence Kohlberg developed Piaget's theory of moral reasoning into a more comprehensive theory (Carpendale, 2000). He also presented vignettes to children of different ages to see how they reasoned whether someone's actions were right or wrong. Consider the following, one of the most famous scenarios Kohlberg used in his research:

> In Europe, a woman was near death from a very bad disease, a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together $1,000, which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug, and I'm going to make money from it." So, Heinz got desperate and broke into the man's store to steal the drug for his wife. (Kohlberg & Kramer, 1969)

When Kohlberg asked children to tell him whether they believed Heinz was right or wrong, he was primarily interested in why the children gave the answer they gave. Based on his interviews with children, Kohlberg identified three levels of moral reasoning: preconventional, conventional, and postconventional.

In the preconventional level of moral development, typical of children under ten years of age, we make

decisions based on what will happen to the individual as a result of their actions. For example, children might say Heinz was wrong to steal the drug because he will be punished or that he was right because his spouse will be so grateful and will reward him. Ultimately, moral decisions are made to avoid punishment, to be obedient, or to get some type of reward.

A child at the conventional level of moral development will judge an action based on what others might think of the individual taking it. They might therefore say that Heinz should not steal the drug because it is illegal, and others would think he was a criminal. Conversely, a child might say he should steal the drug because other people will think he is a good spouse. In both cases, the judgment is based on what others will think of Heinz.

The third and final level of moral development is the postconventional level. At this level, children internalize a moral code and principles based on abstract ideas like justice and compassion and ideas about what is best for humanity. For example, Heinz should steal the drug even though it is against the law, because his wife's life is more important than the law or the potential consequences he might face because he broke it. However, a child could also focus on their interpretation of the value of justice and decide that Heinz is wrong to steal the drug because stealing is morally wrong and may harm others in society. This level is called postconventional because it goes beyond what other individuals may think is right or wrong (conventional) and is based on more universal ethical principles. However, critics of Kohlberg have pointed out that his theory is not universal and may not apply well when researching the moral development across multiple religions and cultures (Moheghi et al., 2020).

Kohlberg's research was also done almost entirely with males. Researcher Carol Gilligan, who initially was a research assistant of Kohlberg's, argued that his theory was biased against women by failing to consider various moral perspectives (Gilligan, 1982). To better assess moral reasoning in ways that were more gender inclusive, Gilligan developed a theory of moral development based on ideas about caring and interpersonal relationships. Ultimately, she argued that individuals have different moral perspectives, focusing either on their own personal needs, the needs of others, or both their needs and the needs of others, but that none of these moral reasons were better or worse.

More recent research on moral development and prosocial behaviors shows that there are many individual and contextual factors that can shape moral development and beliefs. For example, in one study, children in China were found to lie more than children in Canada about prosocial acts (Fu et al., 2016). This was based in part on the cultural values that were most important. Chinese children were more like to believe lying was acceptable if it helps promote group harmony, whereas Canadian children were more likely to focus on whether the lie helped or harmed the individual (Fu et al., 2007, 2016). Findings like these show the way children's moral beliefs and choices are in part based on their understanding of cultural values.

References

Arango–Tobón, O. E., Guevara Solórzano, A., Orejarena Serrano, S. J., & Olivera–La Rosa, A. (2023). Social cognition and prosocial behavior in children with attention deficit hyperactivity disorder: A systematic review. *Healthcare (Basel, Switzerland)*, *11*(10), Article 1366. https://doi.org/10.3390/healthcare11101366

Bengtsson, H., & Arvidsson, Å. (2011). The impact of developing social perspective-taking skills on emotionality in middle and late childhood. *Social Development*, *20*(2), 353–375. https://doi.org/10.1111/j.1467-9507.2010.00587.x

Berástegui, A., & Pitillas, C. (2023). The family keyworker as a critical element for attachment resilience in the face of adversity. *Journal of Family Theory & Review*, *16*(1), 106–123. https://doi.org/10.1111/jftr.12537

Butovskaya, M. L., Burkova, V. N., & Karelin, D. V. (2020). Does friendship matter? Sharing, fairness and parochial altruism in african children and adolescents. *Social Evolution & History*, *19*(1), 89–112. https://doi.org/10.30884/seh/2020.01.05

Camras, L. A. (2022). *Emotional development across the lifespan*. Guilford Press.

Carpendale, J. I. (2000). Kohlberg and Piaget on stages and moral reasoning. *Developmental Review*, *20*(2), 181–205. https://doi.org/10.1006/drev.1999.0500

Chaplin, T. M., & Aldao, A. (2013). Gender differences in emotion expression in children: a meta-analytic review. *Psychological Bulletin*, *139*(4), 735–765. https://doi.org/10.1037/a0030737

De France, K., & Hollenstein, T. (2019). Emotion regulation and relations to well-being across the lifespan. *Developmental Psychology*, *55*(8), 1768–1774. https://doi.org/10.1037/dev0000744

De Raeymaecker, K., & Dhar, M. (2022). The influence of parents on emotion regulation in middle childhood: A systematic review. *Children*, *9*(8), Article 1200. https://doi.org/10.3390/children9081200

Devine, R. T., & Lecce, S. (2021). Why study theory of mind in middle childhood and adolescence? In *Theory of mind in middle childhood and adolescence: Integrating multiple perspectives*. (pp. 2–11). London: Routledge https://doi.org/10.4324/9780429326899

Dodge, K. A., Malone, P. S., Lansford, J. E., Sorbring, E., Skinner, A. T., Tapanya, S., Tirado, L. M. U., Zelli, A., Bornstein, M. H., Chang, L., Deater–Deckard, K., Di Giunta, L., Oburu, P., & Pastorelli, C. (2015). Hostile attributional bias and aggressive behavior in global context. *Proceedings of the National Academy of Sciences*, *112*(30), 9310–9315. https://doi.org/10.1073%2Fpnas.1418572112

Eschenbeck, H., Schmid, S., Schröder, I., Wasserfall, N., Kohlmann, C.–W. (2018). Development of coping strategies from childhood to adolescence: Cross–sectional and longitudinal trends. *European Journal of Health Psychology, 25* (1), 18–30. https://doi.org/10.1027/2512-8442/a000005

Fu, G., Luo, Y. C., Heyman, G. D., Wang, B., Cameron, C. A., & Lee, K. (2016). Moral evaluations of lying for one's own group. *Infant and Child Development*, *25*(5), 355–370. https://doi.org/10.1002/icd.1941

Fu, G., Xu, F., Cameron, C. A., Heyman, G., & Lee, K. (2007). Cross-cultural differences in children's choices, categorizations, and evaluations of truths and lies.

Developmental Psychology, 43, 278–293. https://doi.org/10.1037%2F0012-1649.43.2.278
Gardner, S. E., Betts, L. R., Stiller, J., & Coates, J. (2017). The role of emotion regulation for coping with school-based peer–victimisation in late childhood. *Personality and Individual Differences, 107*, 108–113. https://doi.org/10.1016/j.paid.2016.11.035
Gascoine, L., Higgins, S., & Wall, K. (2017). The assessment of metacognition in children aged 4–16 years: A systematic review. *Review of Education, 5*(1), 3–57. https://doi.org/10.1002/rev3.3077
Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Harvard University Press. https://doi.org/10.2307/j.ctvjk2wr9
Glen, C., Taylor, L. K., & Dautel, J. B. (2020). Promoting prosocial behavior toward refugees: Exploring the empathy-attitude-action model in middle childhood. In Balvin, N., Christie, D.J. (Eds) *Children and Peace* (pp. 71–87). Springer. https://doi.org/10.1007/978-3-030-22176-8_5
Gus, L., Rose, J., & Gilbert, L. (2015). Emotion coaching: A universal strategy for supporting and promoting sustainable emotional and behavioural well–being. *Educational & Child Psychology, 32*(1), 31–41. https://doi.org/10.53841/bpsecp.2015.32.1.31
Helwig, C. C., & Turiel, E. (2002). Children's social and moral reasoning. In M. H. Bornstein, M. E. Lamb, & C. Garcia Coll (Eds.), *Blackwell handbook of childhood social development* (pp 476–490). https://doi.org/10.1002/9781444390933.CH30
Kim, S. Y., Schwartz, S. J., Perreira, K. M., & Juang, L. P. (2018). Culture's Influence on Stressors, Parental Socialization, and Developmental Processes in the Mental Health of Children of Immigrants. *Annual Review of Clinical Psychology, 14*, 343–370. https://doi.org/10.1146/annurev-clinpsy-050817-084925
Kohlberg, L., & Kramer, R. (1969). Continuities and discontinuities in childhood and adult moral development. *Human Development, 12*(2), 3–120. https://doi.org/10.1159/000270857
Kural, A. I., & Kovacs, M. (2021). Attachment anxiety and resilience: The mediating role of coping. *Acta Psychologica*, *221*, Article 103447. https://doi.org/10.1016/j.actpsy.2021.103447
Lane, R. D., & Smith, R. (2021). Levels of emotional awareness: Theory and measurement of a socio–emotional skill. *Journal of Intelligence*, *9*(3), Artcile 42. https://doi.org/10.3390/jintelligence9030042
Lecce, S., & Devine, R. T. (2022). Theory of mind at school: Academic outcomes and the influence of the school context. *Infant and Child Development*, *31*(1), Article e2274. https://doi.org/10.1002/icd.2274
Lewis, M. (2022). The self-conscious emotions. Encyclopedia on Early Childhood Development. https://www.child-encyclopedia.com/emotions/according-experts/self-conscious-emotions
Lisitsa, E. (2013). How to engage in emotion coaching. The Gottman Institute. Retrieved August 26, 2024, from https://www.gottman.com/blog/the-digital-age-emotion-coaching/
Masten, A. S. (2019). Resilience from a developmental systems perspective. *World Psychiatry, 18*(1), 101–102. https://doi.org/10.1002/wps.20591
Moheghi, M., Ghorbanzadeh, M., & Abedi, J. (2020). The investigation and criticism moral development ideas of Kohlberg, Piaget and Gilligan. *International Journal of Multicultural and Multireligious Understanding, 7*(2), 362–374. http://dx.doi.org/10.18415/ijmmu.v7i2.1516
Moltrecht, B., Deighton, J., Patalay, P., & Edbrooke–Childs, J. (2021). Effectiveness of current psychological interventions to improve emotion regulation in youth: a meta–analysis. *European Child & Adolescent Psychiatry*, *30*(6), 829–848. https://doi.org/10.1007/s00787-020-01498-4
National Center for Education Statistics. (2017). Instructional time for third– and eighth–graders in public and private schools: School Year 2011-2012. Retrieved from https://nces.ed.gov/pubs2017/2017076.pdf.
Nguyen, A. –M. D., Benet–Martínez, V. (2013). Biculturalism and adjustment: A meta-analysis. *Journal of Cross–Cultural Psychology*, *44*(2),122–159. https://doi.org/10.1177/0022022111435097
Pauletto, M., Grassi, M., Passolunghi, M. C., & Penolazzi, B. (2021). Psychological well-being in childhood: The role of trait emotional intelligence, regulatory emotional self-efficacy, coping and general intelligence. *Clinical Child Psychology and Psychiatry*, *26*(4), 1284–1297. https://doi.org/10.1177/13591045211040681
Pennequin, V., Questel, F., Delaville, E., Delugre, M., & Maintenant, C. (2020). Metacognition and emotional regulation in children from 8 to 12 years old. *British Journal of Educational Psychology*, *90*(1), 1–16. https://doi.org/10.1111/bjep.12305
Perry, N. B., Dollar, J. M., Calkins, S. D., Keane, S. P., & Shanahan, L. (2020). Maternal socialization of child emotion and adolescent adjustment: Indirect effects through emotion regulation. *Developmental Psychology*, *56*(3), 541–552. https://doi.org/10.1037/dev0000815
Piaget, J. (1954). *The construction of reality in the child*. New York: Basic Books.
Raine, K. E., Zimmer–Gembeck, M. J., & Skinner, E. A. (2023). The role of coping in processes of resilience: The sample case of academic coping during late childhood and early adolescence. *Development and Psychopathology, 35* (5), 2499–2515. https://doi.org/10.1017/S095457942300072X
Rose, L., Kovarski, K., Caetta, F., Makowski, D., & Chokron, S. (2024). Beyond empathy: Cognitive capabilities increase or curb altruism in middle childhood. *Journal of Experimental Child Psychology, 239*, Article 105810. https://doi.org/10.1016/j.jecp.2023.105810
Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, *9*(3), 185–211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG
Satpute A. B., Lindquist K. A. (2019). The default mode network's role in discrete emotion. *Trends in Cognitive Sciences*. https://doi.org/10.1016/j.tics.2019.07.003
Savina, E. (2021). Self-regulation in preschool and early elementary classrooms: Why it is important and how to promote it. *Early Childhood Education Journal*, *49*(3), 493–501. https://doi.org/10.1007/s10643-020-01094-w
Skinner, E. A., & Zimmer–Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology*, *58*(1), 119–144. https://doi.org/10.1146/annurev.psych.58.110405.085705
Skinner, E. A., Zimmer–Gembeck, M. J., (2016). Age differences and changes in ways of coping across childhood and adolescence. In E. A. Skinner, & M.J. Zimmer–Gembeck (Eds.), *The development of coping* (pp. 53–62). Springer. https://doi.org/10.1007/978-3-319-41740-0_3
Thompson, R. A., Simpson, J. A., & Berlin, L. J. (Eds.). (2021). *Attachment: The fundamental questions*. Guilford Publications.
Twum–Antwi, A., Jefferies, P., & Ungar, M. (2020). Promoting child and youth resilience by strengthening home and school environments: A literature review. *International Journal of School & Educational Psychology*, *8*(2), 78–89.
Wu, Y., & Schulz, L. E. (2019). Understanding social display rules: Using one person's emotional expressions to infer the desires of another. *Child Development*, *91*(5), 1786–1799. https://doi.org/10.1111/cdev.13346
Xu, Y., & Krieg, A. (2014). Shyness in Asian American children and the relation to temperament, parents' acculturation, and psychosocial functioning. *Infant and Child Development*, *23*(3), 333–342. https://doi.org/10.1002/icd.1860

8.3 Social Contexts: Peers, Family, and Media in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the nature of friendships and peer status in middle childhood
- Discuss the influence of family during middle childhood
- Describe features of aggression and bullying in middle childhood
- Analyze the positive and negative aspects of media use in middle childhood

Colton and Parker have been best friends since first grade. Now in fifth grade, they are inseparable. Colton always helps Parker when she needs extra help with schoolwork, and Parker always helps Colton when he is feeling shy and nervous around other kids. Despite their differences, Parker and Colton have a lot in common; they grew up on the same street and both enjoy skateboarding, eating pizza, and telling jokes.

Lately, Parker has had problems with a bully at school, who has been teasing her about her long braids. Colton has helped Parker stand up to the bully, supporting her when she's feeling down. Thanks to their friendship, Parker has felt more resilient and braver.

A new streaming channel in which skateboarders try tricks on logs has captivated the two friends. Parker

really wants to go skateboarding in the woods after school, but Colton is nervous that skating on logs and tree stumps might be more dangerous than the videos let on. He's trying to come up with a way to convince his friend to stay at the skate park where there are other people around.

In this unit, you learn more about friendships, bullying, and the role of the media in the elementary school years.

Friendships and Peer Status

Our capacity to form and develop friendships changes in middle childhood in some fundamental ways. Proximity and similarity are still important criteria for friends, but similarity is no longer superficial or based on just demographic characteristics (Afshordi & Liberman, 2021). In middle childhood, children begin to select friends with shared interests (Afshordi & Liberman, 2021), like favorite music, shows, and hobbies, but they also rely on social cognition and relationship skills. Children who display high levels of empathy, altruism, and cooperation tend to attract more friends and playmates. A child who is outwardly aggressive or extremely withdrawn and shy may be overlooked as a possible friend or struggle with loneliness. Friendships in middle childhood can be particularly helpful in the goal of finding acceptance and inclusion and learning the rules of social and emotional engagement (Parker & Gottman, 1989).

Friendships grow in middle childhood as children begin to focus more on having positive, reciprocal friendships and developing trust with varying degrees of friendship (Maunder & Monks, 2019). Friendship has several functions: (1) it provides children with a sense of self-worth and value, (2) it is associated with learning new social and emotional skills and finding new interests, (3) it promotes resilience in children by providing companionship and support, and (4) it influences development through shared cultures and experiences (Bukowski, 2001; Parker & Gottman, 1989). Children who have at least one close friend at this age are more likely to display confidence, emotional stability, and positive coping techniques (Maunder & Monks, 2019). They also tend to have high levels of academic achievement, cognitive focus, and problem-solving and perspective-taking skills. Finally, children with more friends are more likely to experience high peer status, peer acceptance, and wider opportunities for play and inclusion (Maunder & Monks, 2019).

One way for researchers to assess peer status is to use research on peer social evaluations (van den Berg et al., 2015). Children receive a copy of their class roster and are asked to select all the classmates with whom they like spending time, and those with whom they dislike spending time. Researchers then count the number of positive and negative nominations given to each child and sort them into four categories: popular, rejected, controversial, or peer-neglected (Figure 8.6). (The classifications are not shared with the children and are used only for research purposes.) Children who receive many positive and few negative nominations are considered to be popular or well-liked in their classroom. In this context, a **popular child** describes a child who receives multiple positive nominations indicating that they are liked by many children. These children tend to display more prosocial and cooperative behaviors, have a high level of empathy, and apply positive coping techniques.

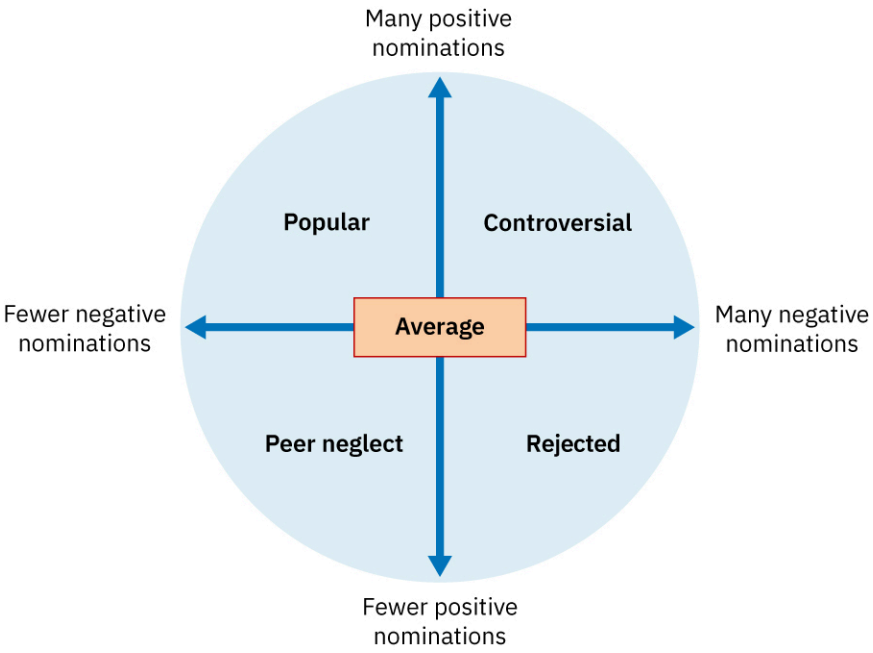


FIGURE 8.6 Researchers can gain understanding into peer status as an element of social development through studies that anonymously have children provide input about which classmates they most enjoy spending time with (Bukowski et al., 2012). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Those who receive few positive and many negative nominations are considered to be a **rejected child** by their peer group and might be actively excluded, victimized, bullied, and ridiculed. Sometimes rejected children display high levels of aggression and hostility or low levels of cooperation. Or they may have a visible disability, a developmental delay, or poor hygiene or belong to an ethnic, linguistic, or gender minority. Children who experience peer rejection are at risk of developing higher levels of depression, loneliness, and isolation (Sakyi et al., 2015). However, when rejected children have at least one good reciprocal friendship, they may be protected from these negative risks (Pedersen et al., 2007). Peer rejection that is the result of bias and social exclusion can also be prevented through creating a positive and inclusive school environment (Lynn Mulvey et al., 2017).

Children with a high number of both positive and negative nominations are well-liked in their peer group but strongly disliked by some others. They are considered a **controversial child** and may be more likely to use relational aggression to covertly intimidate some classmates while behaving cooperatively with others (van den Berg et al., 2015). They may be class leaders who are noticed by everyone, trendsetters, outspoken children, class clowns, or those whom some aspire to be like.

Children who receive a smaller number of both positive and negative nominations are categorized as an **average child**, which puts them in the largest category. Finally, children with a low number of positive and negative nominations are considered to be a **peer-neglected child**. They are more likely to be shy, quiet, and withdrawn from the peer group. Although they do not have bullies or enemies, they do not have friends or close allies either. They may be new to a school or have a high level of absenteeism and thus be relatively unknown by others. Early research speculated that children who experience peer neglect may also feel higher levels of anxiety, loneliness, and isolation (Newcomb et al., 1993). However, more recent research has found that peer-neglected children may actually look much more like the average or popular children and are simply nominated less (Marinucci et al., 2023; Muñoz–Silva et al., 2020).

Parents play a role in establishing the way their children are perceived by their peers. Essentially, children generalize to their peers the social behaviors they learned with their parents. In particular, the parenting style children experience influences their relationships with their peers (Rose et al., 2022). Children who have authoritarian parents (strict and harsh) tend to be less popular than children with authoritative parents (warm

and responsive). The quality of friendships in children has also been linked to the quality of attachment they had with their parents earlier in life (Wong et al., 2020). Children who had a secure attachment with a parent have more positive peer relationships (Delgado et al., 2022).

Family Influences

Although peers grow more influential during middle childhood as children strive toward greater independence, family dynamics, family structure, and sibling relationships still have significant impacts on development.

Family Dynamics

As children strive for independence, they often spend more time with their peers and less with their families (Rueger et al., 2016). However, parents continue to exert social influence in the lives of their children. Parents' primary role is now nurturing rather than providing companionship (Schacter & Margolin, 2019), and they tend to spend time with their children engaged in homework and tasks around the house. These interactions help children learn important life skills. Parents also tend to guide children differently than when the children were younger. They may begin to give them more of a say in the decision-making process (Lansford, 2022). For example, they may allow a child to provide ideas about when they will complete homework and chores.

Parents continue to play an important role in the well-being of children across a variety of family types (Fallesen & Ghler, 2019). Strengths in parenting and families that contribute to child well-being include frequent positive interactions and shared family time, parental flexibility, parent-child communication, and parental support of children's self-regulation (Buehler, 2020). For example, children whose parents are active in their lives (such as spending time together in fun activities and helping with homework (Figure 8.7)) tend to have better self-reported well-being (Li & Guo, 2023). Additionally, open family communication reduces perceived stress and is related to lower parent-child conflict in middle childhood and adolescence (Jiménez et al., 2019).

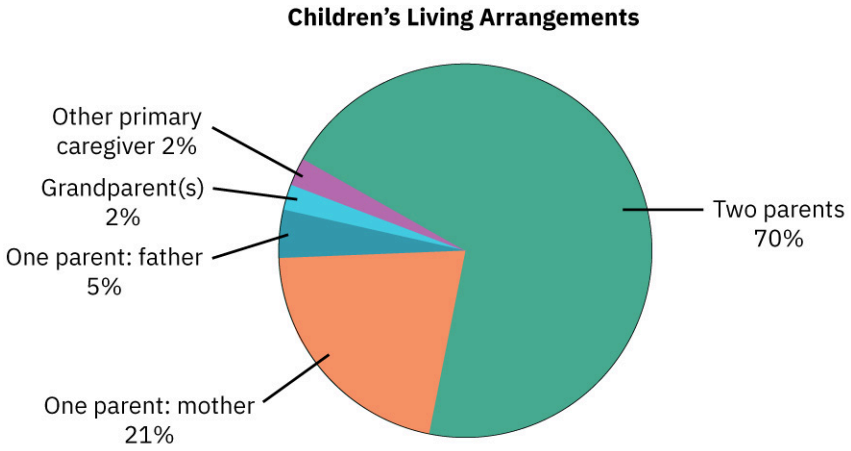
FIGURE 8.7 Positive family interactions include parents engaging in regular activities with their children. (credit: "Family fun" by The Williams Family/Flickr, CC BY 4.0)

An authoritative parenting style, high in both warmth and structure, is associated with healthier child outcomes (Baumrind, 1991). For example, in both European and Latin American countries, high parental warmth, whether authoritative or indulgent, was associated with healthier child self-concept and better emotional development than low warmth parenting styles (Fuentes et al., 2022). Parents begin to play new roles in children's lives by scaffolding children in taking more responsibility for themselves and granting children greater autonomy as they near the end of middle childhood (Benito–Gomez et al., 2020; Huston & Ripke, 2006). As a result, parents are likely to benefit from being flexible to the changing needs of their

children in this stage by maintaining support while providing children with some freedom to become more independent (Teuber et al., 2022).

Family Structure

Since 1960, the number of children living in households with two parents has steadily decreased. In 2019, about 70 percent of households with children had two parents, 26 percent had a single parent, and 4 percent had a grandparent or other nonparent as the primary caregiver. Among single-parent households, most children live with their mother; only 5 percent live with their father (Anderson et al., 2022) (Figure 8.8).



Source: Anderson et al. (2022). Living Arrangements of Children: 2019. U.S. Census Bureau.

FIGURE 8.8 The majority of children are living with two parents, while many others are living with one parent or a nonparent caregiver. (data source: Anderson et al.; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Many single-parent households are the result of divorce, although the death of a parent, adoption, and parenthood through sperm donation or surrogacy also account for some. Children in single-parent households are more likely to live in poverty (Damaske et al., 2017) and to have physical and mental health problems, behavior problems, and poorer academic achievement (Taylor & Conger, 2017). However, most are well-adjusted, particularly when the parent is single by choice (Golombok & Tasker, 2015).

A growing number of children are being raised by parents who identify as lesbian, gay, bisexual, transgender, or queer (LGBTQ+) (Gates, 2015). Although most are the biological children of their parents, LGBTQ+ parents are more likely to adopt children. Research on adopted children who have faced adversity also shows these children often show resilience following adoption at similar levels (Costa et al., 2021). Research has found no differences between the development or psychosocial adjustment of children with same-sex parents and that of other children (Patterson, 2017).

Other family structures include blended and multigenerational families. Blended (or step) families consist of a couple who has at least one child from a previous marriage. In 2019, approximately 7 percent of U.S. children lived with at least one stepparent, and 17 percent lived with at least one half-sibling (Anderson et al., 2022). This structure may present some unique challenges for children. They must develop new relationships with the stepparent and possibly with stepsiblings as well. They may also experience a more complicated family structure or guidelines (Jensen & Sanner, 2021). Stepparents and biological parents may also disagree about parenting decisions, which can lead to conflict. As with many other family structures and types, there can be a wide range of levels of closeness between caregivers and children. When children in blended families face many transitions resulting in instability and a lack of closeness with a caregiver, it can reduce their overall well-being (Raley & Sweeney, 2020). However, when children feel close to their caregiver and have greater family stability, they have greater emotional and social well-being.

Multigenerational families consist of households in which three or more generations live together. Over the past two decades, the number of such households in the United States has increased, due in many cases to financial pressures. Approximately 7.2 percent of family households in the United States were multigenerational in 2020, and 8.4 percent of children under the age of eighteen years lived with their grandparents (U.S. Census, 2023). Multigenerational households are becoming more common and may offer extra support to all members of the family in cognitive functioning and social and emotional support (Lee et al., 2021).

Sibling Relationships

Almost 80 percent of U.S. children have one or more siblings (Gao, 2015), and as they grow into middle childhood, they increasingly spend more time with siblings than with parents. Siblings are a major influence on child development.

Although there can be many benefits to having a sibling, sibling relationships can also have a negative impact. Sibling rivalry may increase during middle childhood because children are engaged in more social comparison (Geerts–Perry et al., 2021). However, sibling conflict can be associated with behavior problems and poorer mental health (Buist & Vermande, 2014). Sibling conflict and aggression tend to increase when there is conflict or other adversity in the family such as death or illness (Tucker et al., 2019). But sibling relationships can also be a source of social support and a helpful context for learning social skills such as conflict resolution (Paine et al., 2022) (Figure 8.9). A warm and friendly social relationship is linked to fewer behavior problems and more prosocial behaviors (Geerts–Perry et al., 2021). When families have higher levels of warmth and communication, siblings are more likely to have less conflicts and better sibling relationships.

FIGURE 8.9 Siblings, such as these two pairs, are important relationships during middle childhood and can help children develop healthy social skills. (credit: "Sibling pairs" by Diana Riser and Jaime Williams/Flickr, CC BY 4.0)

For children who grow up with no siblings, most research shows similar outcomes. In fact, growing up an "only" child may even offer children some small advantages in academic achievement and mental health (Chen et al., 2024; Li et al., 2021). As with many of the various family structures, a great deal of child and family well-being depends more on parenting choices, styles, and stability than on a particular family structure.

Aggression

Although aggression typically decreases during middle childhood, some children continue to be aggressive into adolescence (Evans et al., 2021). Aggression can be either proactive or reactive (Lohbeck, 2022). In **proactive aggression**, aggression is intentional and committed with the intent to harm; it is believed to be

learned behavior. Children who engage in it typically use aggression with a goal in mind, such as bullying another child to establish social dominance. In contrast, **reactive aggression** is unplanned and happens in response to either real or imagined provocation, typically when a child is frustrated or angry.

Aggression can also be either physical or relational (Murray–Close et al., 2024). The inflicting of intentional harm on others or property, or the intimidation of or threat of harm to people and property is **physical aggression**. Children in middle childhood also begin to experience **relational aggression**, which consists of behaviors that can hurt social relationships such as gossip, the starting and spreading of rumors, exclusion by peers, and threats to end a friendship or relationship (Swit & Slater, 2021). Although physical aggression peaks during early childhood and then decreases, relational aggression is more likely to be stable (Blakely–McClure & Ostrov, 2016). Girls tend to experience more relational aggression, which is more associated with poorer self-concept (Björkqvist, 2018). Boys and girls use verbal aggression at similar levels, though there are slight gender differences in other forms of aggression with boys engaging in more physical aggression, while girls engage in more indirect aggression (Björkqvist, 2018; Blakely–McClure & Ostrov, 2016).

Aggression in children can be the result of many different problems. In middle childhood, physical aggression typically happens during free play, when children can choose their own activity and therefore may need to negotiate or resolve conflict on their own. For instance, if a group of children playing on a field disagree over whether a score should be counted, yelling, pushing, and shoving might occur. Children who have a tendency to act out or react with hostility and who experience peer rejection are more likely to display aggression (Yue & Zhang, 2023). Children with parents who use harsh punishment are also more likely to be aggressive (Waller et al., 2018).

Physical aggression also occurs when children are frustrated (Murray–Close et al., 2024), such as when they leave a smaller school for a larger one, as happens in some school districts at the sixth-grade transition between elementary and middle school. Younger students might be intimidated by the older ones in higher grades or even by students from other elementary schools who are jostling for the popular statuses. Aggressive behavior may result as children sort out their social status rankings in this new setting.

Jealousy of others is a common social emotion in middle childhood, but a child who responds by attacking another's reputation or threatening to withhold or harm friendships may feel particularly insecure in their relationships with others (Long & Li, 2020). Children who display higher levels of relational aggression are more likely to be controversial or have prominent peer status, to have high but fragile self-esteem, and to desire to be dominant or a leader among their peers (Weidmann et al., 2024).

Children who are victimized by relational aggression tend to feel betrayed, alone, and isolated and to develop a lack of trust in others (Swit & Slater, 2021). However, perpetrators of relational aggression are at risk of forming only superficial relationships with others, feeling paranoid, and lacking trust in others (Swit & Slater, 2021). Children can cope with peer victimization by seeking support, building positive relationships, practicing assertiveness, and using coping techniques such as deep breathing, mindfulness, and talking about their feelings to manage the emotional impact of poor peer interactions. Improving children's self-concept may also be a promising way to reduce both the negative impact of relational aggression and the likelihood of children engaging in relational aggression (Blakely–McClure & Ostrov, 2016).

Bullying

Encountering one act of physical or social aggression is an unpleasant and harmful experience. However, **bullying** is a repetitive pattern of social and/or physical aggression in which a person with more power harms another with less (Gladden et al., 2014). There are several types of bullying, including physical, verbal, and cyberbullying. Bullying is fairly common during childhood. Almost 35 percent of U.S. children report being bullied at least one to two times in the last twelve months, according to the Data Resource Center for Child and Adolescent Health 2021–2022 data (Child and Adolescent Health Measurement Initiative, 2024).

Physical bullying consists of bodily harm, property damage, or the threat of harm to coerce, control, or scare

others (Armitage, 2021). Verbal bullying is calling another person names, demeaning them, and trying to cause emotional harm (Armitage, 2021). Finally, cyberbullying makes use of technology, online images, videos, and texts to cause emotional stress in another person (Armitage, 2021). Children often have regular access to multiple devices such as cell phones, computers, tablets, and video game systems that can be used for cyberbullying (Evangelio et al., 2022). Cyberbullying differs from more traditional forms of bullying in several important ways: (1) the digital platform can reach a wider audience, which increases the potential for a negative impact on the victim; (2) it can be anonymous, which makes it easier to be a perpetrator *and* a victim; and (3) the bullying act is more permanent because it can remain in cyberspace indefinitely (Olweus & Limber, 2018). For example, a demeaning video can be watched repeatedly and quickly reach a large audience. The impersonal nature of the computer screen can also desensitize users to others' feelings and increase boldness in otherwise timid or cautious individuals.

LINK TO LEARNING

Since bullying increases during middle childhood, caregivers should have strategies to help. The Choose Kindness Project parent playbooks (https://openstax.org/r/104Kindness) provide resources for parents and caregivers of both children who are bullying and those who are being bullied.

Children who are victimized by cyberbullying as well as more traditional forms of bullying are more likely to experience symptoms of depression and anxiety, to have low self-esteem and more suicidal ideations, and to demonstrate lower academic performance (Evangelio et al., 2022). Bullying can also have a negative impact on physical health and sleep and eating patterns (Armitage, 2021).

INTERSECTIONS AND CONTEXTS

Bullying Around the World

Across the world, almost one-third of students have been bullied at school in the past month (UNESCO, 2019). Physical bullying tends to be the most common, except in Europe and North America where relational, also known as psychological, bullying is most prevalent. Cyberbullying is prevalent as well, with older children being more at risk (UNESCO, 2019).[3] Some children are also more likely to be victims of bullying regardless of where they live. In particular, girls, children with disabilities, LGBTQ+ children, and refugee children experience higher levels of bullying and violence in schools (Human Rights Watch, 2020).[4] In some places, teachers perpetrate the bullying; in others, the school and teachers do not have the training or resources to respond effectively (Human Rights Watch, 2020).

Bullying can also extend to other forms of aggression and violence. Children are also often victims of sexism, homophobia, transphobia, and ableism in schools in many countries of the world. Human Rights Watch suggests that governments need to pass binding laws to keep students safe in school and online. The organization further calls for greater coordination between child protective and health-care services as well as anonymous and widespread reporting services.

A growing form of bullying globally is cyberbullying. A survey conducted in thirty countries found that one in three children report having been a victim of online bullying, and 20 percent said they had skipped school because of cyberbullying and violence (UNICEF, 2019). Social media is the most common place children are bullied online. Despite commonly held beliefs that cyberbullying among school-aged children primarily occurs in higher-income countries, 34 percent of children in sub-Saharan Africa say they have been victims (UNICEF, 2019). To combat this growing problem, the United Nations Children's Fund is calling for new policies to protect children, for social media companies to address the problem, and for teachers and parents to be trained to prevent and respond to bullying (cyberbullying and traditional bullying).

3 This study (UNESCO, 2019) uses the terms "Europe" and "North America."
4 This study (Human Rights Watch, 2020) uses the term "LGBT."

The school climate can affect bullying behavior; for example, a school that enforces a strong punishment without rehabilitating bullying behavior tends to increase rather than decrease the behavior (Gaffney et al., 2021). Some more effective bullying programs focus on a tiered approach to shifting bullying interventions away from punishment and toward school-wide prevention instead (Craig & Pepler, 2007). The first tier of action encourages the entire school community—students, teachers, principals, and other staff—to speak out about bullying, to intervene in bullying cases, and to establish secure ways of reporting bullying. The second tier focuses on specific groups of students who may be at heightened risk for engaging in bullying behavior. Workshops, guest speakers, and curriculum events are aimed at developing healthy relationship skills and lowering the risk of bullying. Finally, the third tier consists of rehabilitation, social skills training, and psychotherapy for students who have exhibited high levels of bullying behavior and those who have been victimized.

Researchers found that the most effective way to prevent bullying in children is to educate and train adults who work directly with children to recognize and respond immediately and appropriately to incidents of bullying (Pepler & Cummings, 2016). Effective programs are more likely to reduce bullying when multiple forms of intervention are used and when peers and parents are included in working to reduce and prevent bullying in schools (Gaffney et al., 2021).

Media Influences in Middle Childhood

Media influences our views on clothes and fashion trends, politics, science, social issues, gender, race, money, and other topics. Researchers strive to learn how children consume digital media, demographic differences in their consumption habits, and the impact of digital media on their development.

Use of Digital and Social Media

Media use has increased dramatically over the past decade. About 50 percent of U.S. children have their own smartphone by the age of ten years (Richter et al., 2022), 86.7 percent of ten-year-olds regularly use the internet, and many children begin regularly using social media during middle childhood (Pew Research Center, 2018). A large number watch more television than the amount recommended by psychologists and pediatricians (no more than two hours per day) (Scherger, 2023). Children also regularly stream videos and engage with interactive apps on their devices. Common Sense Media (2022) reported a 17 percent increase in entertainment screen use by both preteens and teens from 2019 to 2021 up to around five and a half hours per day. Radesky et al. (2020) found that only a third of parents could accurately estimate the amount of screen time to which their children are exposed.

While the terms digital media and social media may be used interchangeably in everyday usage, they are different. Digital media is any electronically distributed content and can include material on search engines like Google and marketplaces like Amazon. Social media is a type of digital medium consisting of "interactive technologies that facilitate the creation and sharing of information, ideas, interests, and other forms of expression through virtual communities and networks" on a mass level (APA, 2024). That includes platforms like YouTube, TikTok, Instagram, Facebook, and others.

Boys and girls spend about the same amount of time using digital media, but they use different types (Cardoso–Leite et al., 2021). Boys report spending more time on screens overall, particularly playing video games and watching videos, while girls average more time screen time for socialization such as texting and video chatting (Nagata et al., 2022). There are also racial differences. Black and Hispanic children spend more time with screens than White or Asian children (Nagata et al., 2022).[5] Higher screen use by children is also found when the parents use screens heavily themselves and in lower income households (Nagata et al., 2022).

Viewing online videos was reported to be the favorite activity, more than playing video games, visiting social media, browsing websites, creating content, or video chatting. Social media use among preteens increased

5 this study (Nagata et al., 2022) uses the terms "Black," "White," "Asian," "Native American," "Hispanic," "Latinx," "Latino/Hispanic," and "Latinx/Hispanic."

greatly between 2019 and 2021. Some of this rise was likely due to the COVID-19 pandemic, when many children stayed connected to peers through digital means. However, screen time has not dropped since COVID-19 restrictions were lifted (Hedderson et al., 2023). Of interest though, children are using screen time in a variety of ways including recreational viewing, socializing and video chatting with friends and family, and for educational uses including educational games or completing schoolwork remotely (Hedderson et al., 2023).

Impact of Digital Media

Parents, teachers, and other concerned adults may wonder about the influence of hours of screen time on a variety of child characteristics like attention, cognition, social skills, relationship building, and communication. Empirically measuring such effects and drawing scientific conclusions about them are difficult for several reasons. However, the National Institute of Child Health and Human Development (NICHD) has funded several studies to measure the impact of screen time on child development (National Institute of Child Health and Human Development – Director's Corner, 2023; National Institute of Child Health and Human Development – Director's Corner, 2024).

Research has identified several risks associated with excessive screen time. For example, higher screen use was associated with more obesity in children and adolescents because children are more sedentary and snack more while using screens (Tripathi & Mishra, 2020). Media use is also associated with attention problems and lower academic performance, particularly when children are multitasking (using multiple forms of media simultaneously, like listening to music while interacting with peers on social media) (Cardoso–Leite, 2021). Finally, time spent using digital media has also been linked to mental and physical health problems including depression, social anxiety, and sleep difficulties (Eirich et al., 2022).

Still, there are benefits to interacting with digital media, including exposure to new ideas and easy access to information and awareness of current events (Reid et al., 2016). Screen time in school was related to positive learning outcomes when the screen time had a clear pedagogical purpose with appropriate lesson planning (Pitchford & Outhwaite, 2019). Digital media also allow students to interact and collaborate with each other on school assignments and other projects (Reid et al., 2016). Children and adolescents looking for a community when they feel excluded use social media to connect with others. For example, LGBTQ+ children have used social media to find social support (Fish et al., 2020). Some research shows that playing video games is associated with faster reaction times and better mental health (Cardoso–Leite et al., 2021).

LIFE HACKS

Evaluating Children's Use of Video Games

Children are growing up in a digital world. More than 90 percent of children over the age of two years regularly play video games (Alanko, 2023). During middle childhood, many spend one and a half to two hours a day in this activity, in addition to interacting with screens and digital media in other ways. As a result, many caregivers wonder whether they should be limiting the time children spend on video games.

The answer is complicated. First, research shows some clear benefits to playing video games. When played with others, they are helpful for making social connections, learning social skills, and improving cognitive skills (Kovess–Masfety et al., 2016). However, if too much time is spent on video games, less is available for other important and healthy activities like doing schoolwork, interacting with family, engaging in physical activity, and getting enough sleep (Oliveira et al., 2020). The stimulation from video games can also overload children's sensory systems.

For these reasons, experts, including the American Academy of Pediatrics (Hill et al., 2016), recommend setting some limits on how much time children play video games. Caregivers should ensure that children are still engaging in family meals or other family time, completing their chores and homework, and getting enough exercise through active play. Unstructured play time is very beneficial, so caregivers should also ensure that

children have enough media-free time to engage in creative, imaginative activities. Finally, caregivers should also familiarize themselves with the video games their children are playing, to ensure the content is age appropriate. The Entertainment Software Rating Board (ESRB) (https://openstax.org/r/104ESRB) provides ratings on physical games and apps to which children might be exposed and can be a helpful tool for caregivers.

References

Afshordi, N., & Liberman, Z. (2021). Keeping friends in mind: Development of friendship concepts in early childhood. *Social Development, 30*(2), 331–342. https://doi.org/10.1111/sode.12493

Alanko, D. (2023). The health effects of video games in children and adolescents. *Pediatric Review, 44(1),* 23–32. https://doi.org/10.1542/pir.2022-005666

American Psychological Association (2024) Social media and the internet. https://www.apa.org/topics/social-media-internet

Anderson, L. R., Hemez, P. F., & Kreider, R. M. (2022). *Living arrangements of children: 2019* [Report]. U. S, Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2022/demo/p70-174.pdf

Armitage, R. (2021). Bullying during COVID-19: the impact on child and adolescent health. *British Journal of General Practice, 71*(704), Article 122. https://doi.org/10.3399/bjgp21X715073

Baumrind D. (1991). Effective parenting during the early adolescent transition, In P. A. Cowan & E. M. Herington (Eds.), *Advances in Family Research Series: Family Transitions* (pp. 111–163). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. https://doi.org/10.4324/9780203772393-11

Benito–Gomez, M., Williams, K. N., McCurdy, A., & Fletcher, A. C. (2020). Autonomy–supportive parenting in adolescence: Cultural variability in the contemporary United States. *Journal of Family Theory & Review, 12*(1), 7–26. https://doi.org/10.1111/jftr.12362

Björkqvist, K. (2018). Gender differences in aggression. *Current Opinion in Psychology, 19*, 39–42. https://doi.org/10.1016/j.copsyc.2017.03.030

Blakely–McClure, S. J., & Ostrov, J. M. (2016). Relational aggression, victimization and self–concept: Testing pathways from middle childhood to adolescence. *Journal of Youth and Adolescence, 45*, 376–390. https://doi.org/10.1007/s10964-015-0357-2

Buehler, C. (2020). Family processes and children's and adolescents' well-being. *Journal of Marriage and Family, 82*(1), 145–174. https://doi.org/10.1111/jomf.12637

Buist, K. L., & Vermande, M. (2014). Sibling relationship patterns and their associations with children's competence and problem behavior. *Journal of Family Psychology,* 28(4), 529–537. https://doi.org/10.1037/a0036990

Bukowski, W. M. (2001). Friendship and the worlds of childhood. *New Directions for Child and Adolescent Development, 91*, 93–105. https://doi.org/10.1002/cd.7

Bukowski, W. M., Cillessen, A. H. N., & Velásquez, A. M. (2012). Peer ratings. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (pp. 211–228). New York, NY: The Guilford Press.

Cardoso–Leite, P., Buchard, A., Tissieres, I., Mussack, D., & Bavelier, D. (2021). Media use, attention, mental health and academic performance among 8 to 12 year old children. *PLOS ONE, 16*(11), Article e0259163. https://doi.org/10.1371%2Fjournal.pone.0259163

Chen, P., Rao, S.– Y., Zhang, W., Jiang, Y.– Y., Xiang, Y., Xiang, N. X., Li, Y.– Z., Zhu, H.– Y., Su, Z., Cheung, T., Zhang, Q., Ng, C. H., & Xiang, Y.– T. (2024). Mental health status among children and adolescents in one-child and multichild families: a meta–analysis of comparative studies. *Current Opinion in Psychiatry, 37*(3), 147–161. https://doi.org/10.1097/yco.0000000000000935

Child and Adolescent Health Measurement Initiative. (2024). *2021-2022 National Survey of Children's Health (NSCH) data query.* Data Resource Center for Child and Adolescent Health supported by the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB). Retrieved from https://www.childhealthdata.org/browse/survey/results?q=10523&r=1

Common Sense Media (2022). *Infographic. The Common Sense Census: Media Use by Tweens and Teens, 2021.* https://www.commonsensemedia.org/research/the-common-sense-census-media-use-by-tweens-and-teens-2021

Costa, P. A., Tasker, F., & Leal, I. P. (2021). Different placement practices for different families? Children's adjustment in LGH adoptive families. *Frontiers in Psychology, 12*, Article 649853. https://doi.org/10.3389/fpsyg.2021.649853

Craig, W. M., & Pepler, D. J. (2007). Understanding bullying: From research to practice. *Canadian Psychology/Psychologie Canadienne, 48*(2), 86–93. https://doi.org/10.1037/cp2007010

Damaske, S., Bratter, J. L., & Frech, A. (2017). Single mother families and employment, race, and poverty in changing economic times. *Social Science Research, 62*, 120–133. https://doi.org/10.1016/j.ssresearch.2016.08.008

Delgado, E., Serna, C., Martínez, I., & Cruise, E. (2022). Parental attachment and peer relationships in adolescence: A systematic review. *International Journal of Environmental Research and Public Health, 19*(3), Article 1064. https://doi.org/10.3390/ijerph19031064

Eirich, R., McArthur, B. A., Anhorn, C., McGuinness, C., Christakis, D. A., & Madigan, S. (2022). Association of screen time with internalizing and externalizing behavior problems in children 12 years or younger: a systematic review and meta–analysis. *JAMA Psychiatry, 79*(5), 393–405. https://doi.org/10.1001%2Fjamapsychiatry.2022.0155

Evangelio, C., Rodriguez–Gonzalez, P., Fernandez–Rio, J., & Gonzalez–Villora, S. (2022). Cyberbullying in elementary and middle school students: A systematic review. *Computers & Education, 176*, Article 104356. https://doi.org/10.1016/j.compedu.2021.104356

Evans, S. C., Díaz, K. I., Callahan, K. P., Wolock, E. R., & Fite, P. J. (2021). Parallel trajectories of proactive and reactive aggression in middle childhood and their outcomes in early adolescence. *Research on Child and Adolescent Psychopathology, 49*, 211–226. https://doi.org/10.1007/s10802-020-00709-5

Fallesen P., & Ghler M. (2019). Family type and parents' time with children: Longitudinal evidence for Denmark. *Acta Sociologica, 63*, 000169931986852. http://dx.doi.org/10.1177/0001699319868522

Fish, J.N., McInroy, L.B., Paceley, M.S. et al. (2020). "I'm kinda stuck at home with unsupportive parents right now": LGBTQ youths' experiences with Covid–19 and the importance of online support. *Journal of Adolescent Health, 67(3),* 450–452. https://doi.org/10.1016%2Fj.jadohealth.2020.06.002

Fuentes, M. C., Garcia, O. F., Alcaide, M., Garcia–Ros, R., & Garcia F. (2022). Analyzing when parental warmth but without parental strictness leads to more adolescent empathy and self-–oncept: evidence from Spanish homes. *Frontiers in Psychology,* 13, 821. https://doi.org/10.3389/fpsyg.2022.1060821

Gaffney, H., Ttofi, M. M., & Farrington, D. P. (2021). What works in anti–bullying programs? Analysis of effective intervention components. *Journal of School Psychology, 85*, 37–56. https://doi.org/10.1016/j.jsp.2020.12.002

Gao, G. (2015). Americans' ideal family size is smaller than it used to be. *Pew Research Center.* Retrieved from http:/www.pewresearch.org/fact-bank/2015/05/08/ideal-size-of-the-american-family

Gates, G. J. (2015). Marriage and family: LGBT individuals and same–sex couples. *The Future of Children, 25,* 67–87. https://doi.org/10.1353/foc.2015.0013

Geerts–Perry, A. T., Riggs, S. A., Kaminski, P. L., & Murrell, A. (2021). Psychological well–being and family functioning in middle childhood: The unique role of sibling relational dynamics. *Journal of Family Issues, 42*(12), 2965–2985. https://doi.org/10.1177/0192513X21993191

Gladden, R. M., Vivolo–Kantor, A. M., Hamburger, M. E., & Lumpkin, C. D. (2014). *Bullying surveillance among youths: Uniform definitions for public health and recommended data elements, version 1.0.* [Report]. Centers for Disease Control and Prevention. https://stacks.cdc.gov/view/cdc/21596/cdc_21596_DS1.pdf

Golombok, S., & Tasker, F. (2015). Socioemotional development in changing families. In M. H. Bornstein (Ed.), *Handbook of Child Psychology and Developmental Science* (pp. 1–45). Wiley. https://doi.org/10.1002/9781118963418

Hedderson, M. M., Bekelman, T. A., Li, M., Knapp, E. A., Palmore, M., Dong, Y., Elliott, A. J., Friedman, C., Galarce, M., Gilbert–Diamond, D., Glueck, D., Hockett, C. W., Lucchini, M., McDonald, J., Sauder, K., Zhu, Y., Karagas, M. R., Dabelea, D., Ferrara, A., & Environmental Influences on Child Health Outcomes Program (2023). Trends in screen time use among children during the COVID-19 pandemic, July 2019 through August 2021. *JAMA Network oOpen, 6*(2), Article e2256157. https://doi.org/10.1001/jamanetworkopen.2022.56157

Hill, D., Ameenuddin, N., Chassiakos, Y. L. R., Cross, C., Radesky, J., Hutchinson, J., Boyd, R., Mendelson, R., Moreno, M. A., Smith, J., & Swanson, W. S. (2016). Media use in school-aged children and adolescents. *American Academy of Pediatrics, 138*(5), Article e20162592. https://doi.org/10.1542/peds.2016-2592

Human Rights Watch (2020, November 5) Bullying, violence common in schools worldwide: Governments should urgently tackle education–related abuses. https://www.hrw.org/news/2020/11/05/bullying-violence-common-schools-worldwide

Huston, A. C., & Ripke, M. N. (Eds.). (2006). *Developmental contexts in middle childhood: Bridges to adolescence and adulthood.* Cambridge University Press. https://doi.org/10.1017/CBO9780511499760

Jensen, T. M., & Sanner, C. (2021). A scoping review of research on well-being across diverse family structures: Rethinking approaches for understanding contemporary families. *Journal of Family Theory & Review, 13*(4), 463–495. https://doi.org/10.1111/jftr.12437

Jiménez, T. I., Estévez, E., Velilla, C. M., Martín–Albo, J., & Martínez, M. L. (2019). Family communication and verbal child–to–parent violence among adolescents: The mediating role of perceived stress. *International Journal of Environmental Research and Public Health, 16*(22), 4538. https://doi.org/10.3390/ijerph16224538

Kovess–Masfety, V., Keyes, K., Hamilton, A., Hanson, G., Bitfoi, A., Golitz, D., Koç, C., Kuijpers, R., Lesinskiene, S., Mihova, Z, Otten, R., Fermanian, C., & Pez, O. (2016). Is time spent playing video games associated with mental health, cognitive and social skills in young children?. *Social Psychiatry and Psychiatric Epidemiology,*

51(3), 349–357. https://doi.org/10.1007/s00127-016-1179-6
Lansford, J. E. (2022). Annual research review: Cross–cultural similarities and differences in parenting. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *63*(4), 466–479. https://doi.org/10.1111/jcpp.13539
Lee, H., Ryan, L. H., Ofstedal, M. B., & Smith, J. (2021). Multigenerational households during childhood and trajectories of cognitive functioning among US older adults. *The Journals of Gerontology: Series B*, *76*(6), 1161–1172. https://doi.org/10.1093/geronb/gbaa165
Li, D., & Guo, X. (2023). The effect of the time parents spend with children on children's well-being. *Frontiers in Psychology*, *14*, Article 1096128. https://doi.org/10.3389/fpsyg.2023.1096128
Li, M., Cai, M., Zhong, H., & Liu, H. (2021). Comparisons of academic achievements of one–only children vs. children with siblings in China. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, *40*, 5658–5671. https://doi.org/10.1007/s12144-020-01263-5
Lohbeck, A. (2022). Reactive and proactive aggression among children and adolescents: a latent profile analysis and latent transition analysis. *Children*, *9*(11), Article 1733. https://doi.org/10.3390/children9111733
Long, Y., & Li, Y. (2020). The longitudinal association between social status insecurity and relational aggression: Moderation effects of social cognition about relational aggression. *Aggressive Behavior*, *46*(1), 84–96. https://doi.org/10.1002/ab.21872
Lynn Mulvey, K., Boswell, C., & Zheng, J. (2017). Causes and consequences of social Exclusion and peer rejection among children and adolescents. *Report on Emotional & Behavioral Disorders in Youth*, *17*(3), 71–75. https://www.researchgate.net/publication/327020556_Causes_and_Consequences_of_Social_Exclusion_and_Peer_Rejection_Among_Children_and_Adolescents
Marinucci, M., Pancani, L., & Riva, P. (2023). Exploring the peer status prototypes: A large–scale latent profile analysis on high-school students from four European countries. *Scandinavian Journal of Psychology*, *64*(1), 40–52. https://doi.org/10.1111/sjop.12863
Maunder, R., & Monks, C. P. (2019). Friendships in middle childhood: Links to peer and school identification, and general self-worth. *The British Journal of Developmental Psychology*, *37*(2), 211–229. https://doi.org/10.1111/bjdp.12268
Muñoz–Silva, A., De la Corte de la Corte, C., Lorence–Lara, B., & Sanchez–Garcia, M. (2020). Psychosocial adjustment and sociometric status in primary education: Gender differences. *Frontiers in Psychology*, *11*, Article 607274. https://doi.org/10.3389/fpsyg.2020.607274
Murray–Close, D., Lent, M. C., Sadri, A., Buck, C., & Yates, T. M. (2024). Autonomic nervous system reactivity to emotion and childhood trajectories of relational and physical aggression. *Development and Psychopathology*, *36*(2), 691–708. https://doi.org/10.1017/s095457942200150x
Nagata, J. M., Ganson, K. T., Iyer, P., Chu, J., Baker, F. C., Gabriel, K. P., Garber, A. K., Murray, S. B., & Bibbins–Domingo, K. (2022). Sociodemographic correlates of contemporary screen time use among 9-and 10-year-old children. *The Journal of Pediatrics*, *240*, 213–220. https://doi.org/10.1016/j.jpeds.2021.08.077
National Institute of Child Health and Human Development – Director's Corner. (2023, February). Understanding how digital media affects child development. https://www.nichd.nih.gov/about/org/od/directors_corner/prev_updates/digital-media-child-development-feb2023
National Institute of Child Health and Human Development – Director's Corner. (2024, March). Elucidating the effects of digital media on children.https://www.nichd.nih.gov/about/org/od/directors_corner/prev_updates/effects-digital-media-children-march2024
Newcomb, A. F., Bukowski, W. M., & Pattee, L. (1993). Children's peer relations: a meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological bulletin*, *113*(1), 99. https://doi.org/ 10.1037/0033-2909.113.1.99
Oliveira, C. B., Pinto, R. Z., Saraiva, B. T., Tebar, W. R., Delfino, L. D., Franco, M. R., Silva, C. C. M., & Christofaro, D. G. (2020). Effects of active video games on children and adolescents: A systematic review with meta-analysis. *Scandinavian Journal of Medicine & Science in Sports*, *30*(1), 4–12. https://doi.org/10.1111/sms.13539
Olweus, D., & Limber, S. P. (2018). Some problems with cyberbullying research. *Current Opinion in Psychology*, *19*, 139–143. https://doi.org/10.1016/j.copsyc.2017.04.012
Paine, A. L., Hashmi, S., Howe, N., Johnson, N., Scott, M., & Hay, D. F. (2022). "A pirate goes nee-nor-nee-nor!" Humor with siblings in middle childhood: A window to social understanding?. *Developmental Psychology*, *58*(10), 1986–1998. https://doi.org/10.1037/dev0001403
Parker, J. G., & Gottman, J. M. (1989). Social and emotional development in a relational context: Friendship interaction from early childhood to adolescence. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 95–131). John Wiley & Sons. https://www.researchgate.net/publication/232444421_Social_and_emotional_development_in_a_relational_context_Friendship_interaction_from_early_childhood_to_adolescence
Patterson, C. J. (2017). Parents' sexual orientation and children's development. *Child Development Perspectives*, *11*(1), 45–49. https://doi.org/10.1111/cdep.12207
Pedersen, S., Vitaro, F., Barker, E. D., & Borge, A. I. (2007). The timing of middle–childhood peer rejection and friendship: Linking early behavior to early–adolescent adjustment. *Child Development*, *78*(4), 1037–1051. https://doi.org/10.1111/j.1467-8624.2007.01051.x
Pepler, D., & Cummings, J. (2016). Bullying in early childhood. In O. N. Saracho (Ed.), *Contemporary Perspectives on Research on Bullying in Early Childhood Education* (pp. 35–59). IAP Information Age Publishing. https://psycnet.apa.org/record/2016-61788-003
Pew Research Center (2018). *Teens: Social Media & Technology.* Retrieved from https://www.pewresearch.org/internet/2018/05/31/teens-social-media-technology-2018/
Pitchford, N. J., & Outhwaite, L. A. (2019). Secondary benefits to attentional processing through intervention with an interactive maths app. *Frontiers in Psychology*, *10*, Article 2633. https://doi.org/10.3389/fpsyg.2019.02633
Radesky J. S., Weeks, H. M., Ball, R., Schaller, A., Yeo, S., Durnez, J., Tamayo–Rios, M., Epstein, M., Kirkorian, H., Coyne, S., & Barr, R. (2020) Young children's use of smartphones and tablets. *Pediatrics*, *146*(1), Article e20193518. https://doi.org/10.1542/peds.2019-3518
Raley, R. K., & Sweeney, M. M. (2020). Divorce, repartnering, and stepfamilies: A decade in review. *Journal of Marriage and Family*, *82*(1), 81–99. https://doi.org/10.1111/jomf.12651
Reid Chassiakos, Y. L., Radesky, J., Christakis, D., Moreno, M. A., Cross, C., Hill, D., Ameenuddin, N., Hutchinson, J., Levine, A., Boyd, R., Mendelson, R., & Swanson, W. S. (2016). Children and adolescents and digital media. *Pediatrics*, *138*(5), Article e20162593. https://doi.org/10.1542/peds.2016-2593
Richter, A., Adkins, V., & Selkie, E. (2022). Youth perspectives on the recommended age of mobile phone adoption: Survey study. *JMIR Pediatrics and Parenting*, *5*(4), Article e40704. https://doi.org/10.2196/40704
Rose, A. J., Borowski, S. K., Spiekerman, A., & Smith, R. L. (2022). Children's friendships. In P. K. Smith & C. H. Hart (Eds.), *The Wiley-Blackwell handbook of childhood social development* (3rd ed., pp. 487–502). Wiley Blackwell. https://doi.org/10.1002/9781119679028.ch26
Rueger SY, Malecki CK, Pyun Y, Aycock C, & Coyle S (2016). A meta–analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin*, 142, 1017–1067. https://doi.org/10.1037/bul0000058
Sakyi, K. S., Surkan, P. J., Fombonne, E., Chollet, A., & Melchior, M. (2015). Childhood friendships and psychological difficulties in young adulthood: An 18-year follow-up study. *European Child and Adolescent Psychiatry*, *24*(7), 815–826. https://doi.org/10.1007%2Fs00787-014-0626-8
Schacter, H. L., & Margolin, G. (2019). The Interplay of Friends and Parents in Adolescents' Daily Lives: Towards A Dynamic View of Social Support. *Social development (Oxford, England)*, *28*(3), 708–724. https://doi.org/10.1111/sode.12363
Scherger, S. (2023). *6 tips to reduce children's screen time.* Speaking of Health: Mayo Clinic Health Systems. Retrieved from https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/6-tips-to-reduce-childrens-screen-time
Swit, C. S., & Slater, N. M. (2021). Relational aggression during early childhood: A systematic review. *Aggression and Violent Behavior*, *58*, Article 101556. https://doi.org/10.1016/j.avb.2021.101556
Taylor, Z. E., & Conger, R. D. (2017). Promoting strengths and resilience in single–mother families. *Child Development*, *88*(2), 350–358. https://doi.org/10.1111/cdev.12741
Teuber, Z., Tang, X., Sielemann, L., Otterpohl, N., & Wild, E. (2022). Autonomy–related parenting profiles and their effects on adolescents' academic and psychological development: A longitudinal person–oriented analysis. *Journal of Youth and Adolescence*, *51*(7), 1333–1353. https://doi.org/10.1007/s10964-021-01538-5
Tripathi, M., & Mishra, S.K. (2020). Screen time and adiposity among children and adolescents: a systematic review. *Journal of Public Health (Berlin)*, *28*, 227–244. https://doi.org/10.1007/s10389-019-01043-x
Tucker, C. J., Finkelhor, D., & Turner, H. (2019). Patterns of sibling victimization as predictors of peer victimization in childhood and adolescence. *Journal of Family Violence*, *34*(8), 745–755. https://doi.org/10.1007/s10896-018-0021-1
UNESCO. (2019). *Behind the numbers: Ending school violence and bullying.* https://www.unicef.org/documents/behind-numbers-ending-school-violence-and-bullying
UNICEF. (2019). *UNICEF poll: More than a third of young people in 30 countries report being a victim of online bullying.* https://www.unicef.org/press-releases/unicef-poll-more-third-young-people-30-countries-report-being-victim-online-bullying
US Census. (2023). *Several generations under one roof.* Retrieved from https://www.census.gov
van den Berg, Y. H., Burk, W. J., & Cillessen, A. H. (2015). Identifying subtypes of peer status by combining popularity and preference: A cohort-sequential approach. *The Journal of Early Adolescence*, *35*(8), 1108–1137. https://doi.org/10.1177/0272431614554704
Waller, R., Hyde, L. W., Klump, K. L., & Burt, S. A. (2018). Parenting is an environmental predictor of callous–unemotional traits and aggression: A monozygotic twin differences study. *Journal of the American Academy of Child and Adolescent Psychiatry*, *57*(12), 955–963. https://doi.org/10.1016/j.jaac.2018.07.882
Weidmann, R., Atherton, O. E., & Robins, R. W. (2024). Bidirectional associations between self-esteem and relational aggression from 5th to 11th grade. *European Journal of Personality*, *38*(2), 123–140. https://doi.org/10.1177/08902070221141581
Wong, T. K., Konishi, C., & Cho, S. B. (2020). Paternal and maternal attachment: A multifaceted perspective on adolescents' friendship. *Journal of Child and Family Studies*, *29*(1), 217–226. https://doi.org/10.1007/s10826-019-01552-z
Yue, X., & Zhang, Q. (2023). The association between peer rejection and aggression types: A meta–analysis. *Child Abuse & Neglect*, *135*, Article 105974. https://doi.org/10.1016/j.chiabu.2022.105974

8.4 Context: School and Extracurricular Activities in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify features of the school climate that foster development
- Describe types of teacher-student relationships
- Discuss the goals of the positive youth development model

Yvonne wants to go to school and learn. They love the thrill of studying something new, memorizing information for a test, and pushing their mind in new directions. The adrenaline rush of writing a math answer on the board or raising a hand to provide an answer is fulfilling and fun.

But despite this, school is not a place where Yvonne feels comfortable. The other students in class are not enthusiastic about learning and seldom share Yvonne's eagerness for reading long books or perfecting long-division skills. The teacher seems scattered, sometimes losing his place while teaching. Yvonne feels understimulated and underappreciated. The classroom is a place of chaotic disorganization and distracted classmates, and Yvonne feels like they are the only one who cares.

In this section, you'll consider the demands of the class on students, and the way the school environment can influence child development outcomes through the teacher-student relationship.

You'll also learn about the social aspects of school and other contexts of youth development.

Academic Demands

One of the biggest changes in middle childhood is navigating formal education, or elementary school. School is a social place, in which peer interactions are expected and demanded for most of the day, and in which children encounter new social and emotional demands. As children enter middle childhood, their formal schooling becomes more structured, and assessment becomes increasingly important. Elementary schools have become more focused on teaching skills that are assessed on standardized tests (Russell, 2011). These academic demands require attention and self-control from students (Degol & Bachman, 2023; Pener–Tessler et al., 2022). Children may also face learning obstacles and new relationships with peers and teachers.

Students are expected to remain at their desks for most of the day and follow along with group activities, complete tasks on time, and keep their bodies still. In fact, children spend about 64 percent of their school day sedentary (Egan et al., 2019). Sedentary behavior is linked to more inattention and increased hyperactivity (Suchert et al., 2017). It can be particularly demanding for children who feel the need to wiggle, dance, and walk to concentrate, and especially difficult for children with attention-deficit/hyperactivity disorder (Evans et al., 2020). Further, research has shown that being physically active has important academic benefits (Norris et al., 2020).

Finally, the classroom is a place of learning, particularly about literacy, math, and other academic subjects. By the end of middle childhood, children are beginning to take tests and quizzes and complete individual projects. A focus on academic performance can put emotional strain on children as they learn to measure up and perform at the expected levels. Academic stress is associated with lower academic performance (Luo et al., 2016). This stress and pressure can come from a range of sources including the child's personal academic goals as well as from school staff or family members (Sotardi, 2016).

Parenting style is a particularly important influence on the child's academic achievement. When parents show high levels of warmth, it can help a child build confidence in their academic abilities, while lower warmth from parents may increase a child's experience of academic pressure (Luo et al., 2020). Parents' and teachers' expectations also matter. Having higher educational expectations for children can lead to positive academic performance, but very high expectations can exert pressure and generate academic burnout (Luo et al., 2020). In some cases, failure to meet parents' academic expectations can lead to child maltreatment. For example, one study found that incidents of child abuse increase when report cards go home (Bright et al., 2019). Parents

who place a lot of focus on measures of how their child is doing in school (grades and test scores) may also unintentionally teach children to focus on grades rather than on the process of learning (Pinquart & Ebeling, 2020).

Parental expectations about academic performance vary across cultures. For example, parents in the United States tend to focus on academic success and praising their child, while many parents in China are more involved and tend to focus more on academic failures and mistakes (Pomerantz et al., 2014). Although parental expectations for academic performance tend to be lower among children in families with lower socioeconomic status (SES) in Western societies, parents of children in East Asian societies more consistently have high expectations across families with lower and higher SES (Li & Xie, 2020).[6] Multiple factors including parent education, culture, and financial resources are likely to influence how parents express their academic expectations to children. Generally, research indicates that a hybrid approach, emphasizing learning from mistakes while praising successes, may be beneficial to most children (Pomerantz et al., 2014).

Classroom Climate

How well children navigate and meet the demands of the classroom largely depends on **classroom climate**, the emotional culture of the learning environment. For instance, a positive classroom climate is characterized by encouragement from peers, well-organized learning activities, respect for the asking and answering of questions, kindness, warmth, and happiness (Wang et al., 2020). It also includes positive disciplinary practices and a focus on developing positive interpersonal relationships between teachers, students, and their peers (Wang & Degol, 2016). Children who experience positive classroom climates are more likely to participate, volunteer answers, and enjoy being in school (Wang et al., 2020).

In contrast, a negative classroom climate is characterized by chaotic or disorganized activities, teachers and peers who are critical and judgmental, bullying behavior, or an overly strict and disciplinary atmosphere. Children in this climate are more likely to disengage, withdraw, and form a negative opinion about school and learning (Wang et al., 2020).

Given the importance of classroom climate for academic success, many countries, including Canada, China, Germany, England, France, Israel, Singapore, and the United States, have initiatives designed to improve it (Wang et al., 2020). For example, some schools have focused on improving school quality through improving the relationships between teachers, parents, and students, while many other schools have moved toward a focus on promoting positive behaviors in classrooms (Horner et al., 2015; Wang & Degol, 2016).

LINK TO LEARNING

Education for elementary school children is often approached quite differently in other countries. Some elementary school rules in Japan (https://openstax.org/r/104SchoolJapan) are presented in this video.

Teacher-Group Relationships

Teachers have a major impact on classroom climate. A teacher who is aloof, distant, and disorganized may influence students to be off-task, overly active, and talkative (Wang et al., 2020). Teachers who are intrusive, overdemanding, and authoritarian, however, may foster a fearful learning environment in which students experience anxiety and stress over their contributions and performance. A teacher who provides a high level of warmth, encouragement, and support for autonomy can create a positive learning environment in which students feel comfortable participating and can rise to their full potential (Quin, 2017).

6 This study (Li & Xie, 2020) uses the terms. "East Asian" and "Western" in research involving populations from China, Taiwan, South Korea, Germany, Australia, and the United States.

FIGURE 8.10 The classroom environment plays an important role in a child's relationship to the teacher one-on-one and in peer groups. (credit: "05062014 ED Goes Back to School 6" by US Department of Education/Flickr, CC BY 2.0)

Teachers' classroom organization and teaching strategies also influence the climate, including how responsive teachers are to student questions, their instructional formats and learning activities, and their sensitivity to student needs (Miller & Wang, 2019). Effective teaching strategies that allow children to work independently and develop competence, practice in small groups and with challenging learning problems, while promoting a warm and helpful learning environment can all help children stay engaged in the learning process (Miller & Wang, 2019).

Teacher-Child Relationships

In addition to fostering classroom climate, teachers also form one-on-one relationships with their students that can influence the way each child perceives school and learning. Teachers who promote communication and are open to student feedback are more likely to foster healthy teacher-student relationships, which in turn increases student motivation (Liu, 2021). Teachers and students who are excited to see each other, look forward to exchanging ideas, and are comfortable approaching one another are considered to have a close teacher-child relationship. Close relationships are beneficial for learning both because they allow children to be happy to attend school and listen to their teacher and because they motivate teachers to excel in their profession. Children who form close relationships with their teachers are more likely to have a high level of prosocial and cooperative behaviors (Portilla et al., 2014).

Some children may form dependent teacher-child relationships in which they are particularly clingy, overly attached, or possessive of their teacher. This relationship may occur with children who are nervous, shy, or new to formal education (Bosman et al., 2021). They often desire more one-on-one attention from their teacher than is possible, they may require extra assistance during learning activities, they may become upset when their teacher is absent or unavailable, and they may use their teacher as an emotional support system. However, when teachers are provided with training and support to improve teacher-student relationships, children and teachers are more likely to form healthier relationships and learning environments (Bosman et al., 2021).

Finally, children and teachers may form conflicted relationships, in which their exchanges are characterized by arguments, suspicion, power struggles, and conflict (Mason et al., 2017). Some children who form conflicted relationships with their teachers may struggle with motivation to do well and instead may dislike and harbor hostile feelings toward school. For example, one study found higher rates of teacher-perceived behavioral problems among Norwegian school-aged children who had conflicted relationships with their teachers (Drugli, 2013). Conflicted relationships can also have a negative impact on the teacher. For example, teachers in such relationships are at greater risk of burnout and struggle more with class organization and quality (Hoglund et al., 2015). Promoting greater classroom support for teachers and positive behavior in the classrooms can

improve teacher self-efficacy and teacher perceptions of student behaviors and increase teacher-student relationship quality.

Cultural expectations may also influence the development of conflicted relationships. Teachers may enter the classroom with expectations based on their own culture or influenced by stereotypes they hold. For example, children of color as well as children from low-SES backgrounds are more likely to be perceived by their teachers to have more socioemotional problems (Ginsberg, 2023). White teachers often see their relationships with White children more positively than their relationships with Black children, particularly leaving Black boys at a higher risk of poor teacher-child relationship (Rudasill et al., 2023). However, when close teacher-student relationships are present for children of color, including Black and Latino boys, it can serve as a protective factor and promote learning gains such as in language skills (Goldberg & Iruka, 2023).[7]

Over the course of middle childhood, this racial gap in teacher-child conflict widens (Spilt & Hughes, 2015). Unintentional biases among school officials can interact with systemic racism and students' adverse childhood experiences to foster conditions that increase academic failure and dropout risk, particularly for historically marginalized racial and ethnic children. However, these trajectories can be shifted by greater classroom diversity, an increase in teacher diversity, and provision of educational interventions at the school level that promote positive behavioral support and cultural competence (La Salle et al., 2020; Rasheed et al., 2020).

Deficit versus Asset-Based Models in the Classroom

Valencia (1997, 2012) pointed out that for many decades, the education system has blamed the poor school performance of children of color on genetic, familial, and cultural deficits. This deficit model assumes that little can be done to assist the students who are at risk of failing in class and overlooks the wealth of cultural communication styles, intellectual skills, and creativity children bring to the classroom. A strength- or asset-based model, in contrast (Flint & Jaggers, 2021), assumes that all children have internal, familial, and cultural assets or strengths that they use in the classroom, learning and thriving despite facing odds like poverty and systemic racism.

In fact, the asset-based model values the insights students bring to the classroom from their cultural experiences, while at the same time striving to reduce injustices based on oppression and other social factors (Muhammad, 2020). For example, educators have documented educational projects that highlight the diversity of identities in the classroom, such as a "Who Am I?" project (Zhang–Yu et al., 2020) that allows students to connect the learning of new information to their prior knowledge and personal experience.

Interventions can take the form of training and teaching strategies that recognize and value students' cultural backgrounds in all aspects of learning. In line with a strength-based model, Muhammad (2020) suggests focusing on identity and building on the creativity and talent children possess. Hammond (2014) notes that culturally inclusive teaching environments are not only about celebrating Black History month or Cinco de Mayo but rather about truly understanding the diverse ways in which families communicate in different cultures, celebrating and valuing those diverse communication patterns, and leveraging them in the classroom.

Numerous programs have been developed in schools using an antibias framework to improve outcomes for marginalized children. For example, summer programs that support children in economically disadvantaged households or neighborhoods can reduce achievement gaps in academic skills. Programs are more likely to be effective if they include interactive learning, highly trained teachers, and small class sizes (Lynch et al., 2023; Trends, 2009). Improving inclusion in the classroom can have a positive influence on students' growth, learning, and feelings of safety in the classroom. One study of Canadian teachers found that when teachers were more culturally sensitive and aware, they were more likely to focus on and promote Indigenous students' overall skills and knowledge, which in turn improved students' academic achievement (Perso, 2020).

7 This study (Goldberg & Iruka, 2023) uses the terms "Black" and "Latino."

A U.S. study found that nationwide almost 75 percent of K–12 teachers surveyed said they provide antibias education in different forms in their classroom (Woo et al., 2022). The study recommended developing and adopting clear and shared standards and evidence-based practices for antibias education and investing in curriculum development and selection and hiring practices (Woo et al., 2022). Teachers who used antibias curriculum materials said their students were more respectful of diversity and developed more positive social identities (Woo et al., 2022). For example, New Jersey's department of education and division on civil rights have developed several resources and a plan to prevent, interrupt, and deal with instances of bias in schools (New Jersey DCR & DOE, 2023). However, there is still a long way to go to ensure equitable practices for all children's social and educational development to benefit.

LINK TO LEARNING

This article describes a study by Nelson and Johnson (2023) that examined White teachers' responses to working in racially diverse schools (https://openstax.org/r/104WhiteTeacher) where they were either in the majority or the minority.

Positive Youth Development

Outside formal education, middle childhood is a time of expanding our network to include new extracurricular activities and connections. Children in this developmental phase often engage in music, sports, art, and civic activities that allow them to practice teamwork, leadership, and personal growth skills. Members of scouting groups, for example, often learn many interpersonal and self-regulatory skills that help them to better communicate, understand, and interact with the world around them. Engaging in fundraisers for charitable organizations, organizing community events, and learning about their local, regional, and global issues helps children to better understand their part in the world.

Despite clear benefits, however, extracurricular activities also highlight disparities in SES. Though they have the most to gain from after-school programs, children from lower SES backgrounds have the least access to them due to barriers such as expense and transportation needs (Heath et al., 2022; Smink, 2013). As communities recognize this, many are taking steps to make extracurricular activities more accessible to families with lower SES. For example, many foundations provide support for after-school programs designed to reach children from families with lower SES and immigrant families (Heath et al., 2022).

Whether extracurriculars consist of a coding club at the library, arts at school, sports activities, or environmental activism, the goal is often to facilitate the development of resilience (Figure 8.11). As you've learned, resilience is the emotional ability to respond to stressful events with determination, perseverance, and adaptability. For instance, a child who is studying dance may need to commit long hours to performing a routine (determination), continue performing over many weeks and months (perseverance), and learn to accept feedback and become better at certain parts of the routine (adaptability).

(a) (b)

FIGURE 8.11 Involvement in extracurricular activities, such as (a) the school's marching band or (b) a theater

group, can promote healthy developmental skills, including resilience. (credit a: modification of work "2001 Chasco Fiesta Parade" by Jeff Miller/Flickr, Public Domain; credit b: modification of work "58" by "spibbler"/Flickr, Public Domain)

Actively helping children by understanding and promoting predictors of well-being, thriving, and prosocial development in childhood and beyond is the focus of **positive youth development (PYD)** programs (Johnson & Ettekal, 2023). There are a variety of PYD models and theories, and they may use a range of techniques to engage youth, but at their core they all focus on promoting thriving in healthy youth development (Johnson & Ettekal, 2023). The PYD programs use a strengths-based model to focus on helping children develop by using their existing resources. For example, participation in sports is one way to engage youth and has been linked to positive socioemotional and mental health outcomes in children (Whitley et al., 2019) as well as to the learning of life skills and feelings of competence and confidence (Bruner et al., 2023).

References

Bosman, R. J., Zee, M., de Jong, P. F., Koomen, H. M. Y. (2021). Using relationship–focused reflection to improve teacher–child relationships and teachers' student–specific self-efficacy. *Journal of School Psychology, 87*, 28–47. https://doi.org/10.1016/j.jsp.2021.06.001

Bright, M. A., Lynne, S. D., Masyn, K. E., Waldman, M. R., Graber, J., & Alexander, R. (2019). Association of Friday school report card release with Saturday incidence rates of agency–verified physical child abuse. *JAMA Pediatrics, 173*(2), 176–182. https://doi.org/10.1001%2Fjamapediatrics.2018.4346

Bruner, M. W., McLaren, C. D., Sutcliffe, J. T., Gardner, L. A., Lubans, D. R., Smith, J. J., & Vella, S. A. (2023). The effect of sport–based interventions on positive youth development: A systematic review and meta–analysis. *International Review of Sport and Exercise Psychology*, *16*(1), 368–395. https://doi.org/10.1080/1750984X.2021.1875496

Degol, J. L., & Bachman, H. J. (2023). Early self–control and sustained attention problems: Associations with youth achievement, motivation, and engagement. *Cognitive Development*, *65*, Article 101290. https://doi.org/10.1016/j.cogdev.2022.101290

Drugli, M. B. (2013). How are closeness and conflict in student–teacher relationships associated with demographic factors, school functioning and mental health in Norwegian schoolchildren aged 6–13?. *Scandinavian Journal of Educational Research, 57*(2), 217–225. https://doi.org/10.1080/00313831.2012.656276

Egan, C. A., Webster, C. A., Beets, M. W., Weaver, R. G., Russ, L., Michael, D., Nesbitt, D., & Orendorff, K. L. (2019). Sedentary time and behavior during school: a systematic review and meta-analysis. *American Journal of Health Education, 50*(5), 283–90. https://doi.org/10.1080/19325037.2019.1642814

Evans, S. C., Cooley, J. L., Blossom, J. B., Pederson, C. A., Tampke, E. C., & Fite, P. J. (2020). Examining ODD/ADHD symptom dimensions as predictors of social, emotional, and academic trajectories in middle childhood. *Journal of Clinical Child and Adolescent Psychology: The Official Journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, *49*(6), 912–929. https://doi.org/10.1080/15374416.2019.1644645

Flint, A. S., & Jaggers, W. (2021). You matter here: The impact of asset-based pedagogies on learning. *Theory Into Practice*, *60*(3), 254–264. https://doi.org/10.1080/00405841.2021.1911483

Ginsberg, Y. C. (2023). Socialization discontinuity as an explanation for disparities in teacher–child relationships. *Early Childhood Research Quarterly*, *65*, 170–178. https://doi.org/10.1016/j.ecresq.2023.06.006

Goldberg, M. J., & Iruka, I. U. (2023). The role of teacher–child relationship quality in Black and Latino boys' positive development. *Early Childhood Education Journal*, *51*(2), 301–315. https://doi.org/10.1007/s10643-021-01300-3

Hammond, Z. (2014) *Culturally responsive teaching and the brain: Promoting authentic engagement and rigor among culturally and linguistically diverse students.* Corwin Publishers. https://us.sagepub.com/sites/default/files/upm-assets/140839_book_item_140839.pdf

Heath, R. D., Anderson, C., Turner, A. C., & Payne, C. M. (2022). Extracurricular activities and disadvantaged youth: A complicated—but promising—story. *Urban Education*, *57*(8), 1415–1449. https://doi.org/10.1177/0042085918805797

Hoglund, W. L., Klingle, K. E., & Hosan, N. E. (2015). Classroom risks and resources: Teacher burnout, classroom quality and children's adjustment in high needs elementary schools. *Journal of School Psychology*, *53*(5), 337–357. https://doi.org/10.1016/j.jsp.2015.06.002

Horner, R. H., Sugai, G., & Lewis, T. (2015). Is school-wide positive behavior support an evidence-based practice?. https://aztap.org/wp-content/uploads/2014/07/Daniel-Gulchak-072017-Gulchak-Handout.pdf

Johnson, S. K., & Ettekal, A. V. (2023). The five Cs of positive youth development: configurations of thriving in four U.S. adolescent samples. *Journal of Research on Adolescence*, *33*(2), 656–679. https://doi.org/10.1111/jora.12806

La Salle, T. P., Wang, C., Wu, C., & Rocha Neves, J. (2020). Racial mismatch among minoritized students and white teachers: Implications and recommendations for moving forward. *Journal of Educational and Psychological Consultation, 30*(3), 314–343. https://doi.org/10.1080/10474412.2019.1673759

Li, W., & Xie, Y. (2020). The influence of family background on educational expectations: a comparative study. *Chinese Sociological Review*, *52*(3), 269–294. https://doi.org/10.1080/21620555.2020.1738917

Liu, W. (2021). Does teacher immediacy affect students? A systematic review of the association between teacher verbal and non-verbal immediacy and student motivation. *Frontiers in Psychology*, *12*, Article 713978. https://doi.org/10.3389/fpsyg.2021.713978

Luo, Y., Deng, Y.T., & Zhang, H. (2020). The influences of parental emotional warmth on the association between perceived teacher-student relationship and academic stress among middle school students in China. *Children and Youth Services Review, 114,* Article 105014. https://doi.org/10.1016/j.childyouth.2020.105014

Luo, Y., Wang, Z., Zhang, H. & Chen, A. (2016). The influence of family socio–economic status on academic burnout in adolescents: Mediating and moderating effects. *Journal of Child and Family Studies, 25*, 2111–2119. https://doi.org/10.1007/s10826-016-0400-2

Lynch, K., An, L., & Mancenido, Z. (2023). The impact of summer programs on student mathematics achievement: A meta–analysis. *Review of Educational Research*, *93*(2), 275–315. https://doi.org/10.3102/00346543221105543

Mason, B. A., Hajovsky, D. B., McCune, L. A., & Turek, J. J. (2017). Conflict, closeness, and academic skills: A longitudinal examination of the teacher–student relationship. *School Psychology Review, 46*(2), 177–189. https://doi.org/10.17105/SPR-2017-0020.V46-2

Muhammad, G. (2020) *Cultivating genius: An equity framework for culturally and historically responsive literacy.* Scholastic Teaching Resources.

Nelson, J. L., & Johnson, T. D. (2023). How white workers navigate racial difference in the workplace: Social-emotional processes and the role of workplace racial composition. *Work and Occupations*, *51*(3). https://doi.org/10.1177/07308884231176833

New Jersey Division on Civil Righta & Department of Education. (2023). Addressing Bias in K12 Schools. https://www.njoag.gov/wp-content/uploads/2023/05/Addressing-Bias-in-K-12-Schools.pdf

Norris, E., van Steen, T., Direito, A., & Stamatakis, E. (2020). Physically active lessons in schools and their impact on physical activity, educational, health and cognition outcomes: a systematic review and meta-analysis. *British Journal of Sports Medicine*, *54*(14), 826–838. https://doi.org/10.1136/bjsports-2018-100502

Pener–Tessler, R., Markovitch, N., & Knafo–Noam, A. (2022). The special role of middle childhood in self-control development: Longitudinal and genetic evidence. *Developmental Science*, *25*(5), Article e13270. https://doi.org/10.1111/desc.13270

Perso, T. (2020). *Teaching Indigenous students: Cultural awareness and classroom strategies for improving learning outcomes.* Routledge. https://doi.org/10.4324/9781003117728

Pinquart, M. & Ebeling, M. (2020). Parental education expectations and academic achievements in children and adolescents – A meta–analysis. *Educational Psychology Review, 32,* 463–480. https://doi.org/10.1007/s10648-019-09506-z

Pomerantz, E. M., Ng, F. F. Y., Cheung, C. S. S., & Qu, Y. (2014). Raising happy children who succeed in school: Lessons from China and the United States. *Child Development Perspectives*, *8*(2), 71–76. https://doi.org/10.1111/cdep.12063

Portilla, X. A., Ballard, P. J., Adler, N. E., Boyce, W. T., & Obradovic, J. (2014). An integrative view of school functioning: Transactions between self–regulation,school engagement, and teacher–child relationship quality. *Child Development, 85*, 1915–1931. https://doi.org/10.1111/cdev.12259

Quin, D. (2017). Longitudinal and contextual associations between teacher–student relationships and student engagement: A systematic review. *Review of Educational Research*, *87*(2), 345–387. https://doi.org/10.3102/0034654316669434

Rasheed, D. S., Brown, J. L., Doyle, S. L., & Jennings, P. A. (2020). The effect of teacher–child race/ethnicity matching and classroom diversity on children's socioemotional and academic skills. *Society for Research in Child Development*, *91*(3), e597–e618. https://doi.org/10.1111/cdev.13275

Rudasill, K. M., McGinnis, C. P., Cheng, S. L., Cormier, D. R., & Koziol, N. (2023). White privilege and teacher perceptions of teacher–child relationship quality. *Journal of*

School Psychology, 98, 224–239. https://doi.org/10.1016/j.jsp.2023.04.002
Russell, J. L. (2011). From child's garden to academic press: The role of shifting institutional logics in redefining kindergarten education. *American Educational Research Journal* 48(2), 236–67. https://doi.org/10.3102/0002831210372135
Smink, J. (2013). A proven solution for dropout prevention: Expanded learning opportunities. In Terry K. P. (Ed.), *Expanding minds and opportunities: Leveraging the power of afterschool and summer learning for student success* (pp. 50–57). Washington, DC: Collaborative Communications Group. Retrieved from http://www.expandinglearning.org/sites/default/files/expandingminds_section_1_0.pdf#page=52.
Sotardi, V. A. (2016). Exploring school stress in middle childhood: interpretations, experiences, and coping. *Pastoral Care in Education*, *35*(1), 13–27. https://doi.org/10.1080/02643944.2016.1269360
Spilt, J. L., & Hughes, J. N. (2015). African American children at risk of increasingly conflicted teacher–student relationships in elementary school. *School psychology review, 44*(3), 306-314. http://dx.doi.org/10.17105/spr-14-0033.1
Suchert, V., Pedersen, A., Hanewinkel, R., & Isensee, B. (2017). Relationship between attention–deficit/hyperactivity disorder and sedentary behavior in adolescence: a cross–sectional study. *Attention Deficit and Hyperactivity Disorders*, *9*(4), 213–218. https://doi.org/10.1007/s12402-017-0229-6
Trends, C. (2009). Effective and promising summer learning programs and approaches for economically–disadvantaged children and youth.
Valencia, R. R. (2012). *The evolution of deficit thinking: Educational thought and practice*. Routledge.
Valencia, R. R. (Ed.). (1997). *The evolution of deficit thinking: Educational thought and practice*. The Falmer Press/Taylor & Francis.
Wang, M. T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychology Review, 28*(2), 315–352. https://psycnet.apa.org/doi/10.1007/s10648-015-9319-1
Wang, M. T., Degol, J. L., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta–analysis. *Developmental Review, 57*, Article 100912. https://doi.org/10.1016/j.dr.2020.100912
Whitley, M. A., Massey, W. V., Camiré, M., Boutet, M., & Borbee, A. (2019). Sport–based youth development interventions in the United States: A systematic review. *BMC Public Health, 19*(1), Article 89. https://doi.org/10.1186/s12889-019-6387-z
Woo, A., Lawrence, R. A., Doan, S., & Kaufman, J. H. (2022). A Snapshot of Anti–Bias Education in U.S. K–12 Schools: Findings from the 2021 American Instructional Resources Surveys. Santa Monica, CA: RAND Corporation. https://www.rand.org/pubs/research_reports/RRA134-12.html.
Zhang–Yu, C., García-Díaz, S., García-Romero, D., & Lalueza, J. L. (2020). Funds of identity and self-exploration through artistic creation: Addressing the voices of youth. *Mind, Culture, and Activity 28*(2), 1–14. https://doi.org/10.1080/10749039.2020.1760300

8.5 Atypical Development and Interventions in Middle Childhood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify and define the features of common behaviors that can be problematic for children's socioemotional well-being
- Identify the features of developmental disorders common in middle childhood
- Discuss typical developmental pathways and interventions for promoting mental health, well-being, and resilience in childhood

Adam is seven years old. In his first-grade classroom, he is on the edge of his seat or on the floor most of the day. When his teacher asks the students to complete a page of work including two descriptive sentences and a picture, he completes the assignment but usually takes longer than most of his classmates. He has difficulty following the sequence of instructions, and he sometimes completely skips questions in a seemingly random way. He also has difficulty keeping his hands to himself and blurts out the first thing that comes to his mind at any time.

At lunch and on the playground, Adam is very active and moves around a lot. While eating lunch, he wanders around talking to friends and often doesn't finish his meal. He thrives at recess where he has more flexibility in how he chooses to play with peers and with a variety of activities. Adam's teachers seem to always be telling him to sit still. The teachers seem to be bothered by his fidgeting, but he rather enjoys learning while squirming. Adam doesn't understand why his behaviors seem to be a problem for teachers and is beginning to feel like school might not be as much fun as it was in kindergarten.

In this section, you'll learn about some of the more common behaviors that can be problematic for children, including internalizing and externalizing behaviors, and the mental health disorders like depression and anxiety that sometimes require support in middle childhood. Neurodevelopmental diversities, including attention-deficit/hyperactivity disorder and autism spectrum disorder, can also play a role in socioemotional well-being. Prevention and intervention supports can help to promote mental health and well-being in middle childhood. When those working with or caring for children are better educated on supporting the development of children with diverse learning needs, these children are better able to thrive.

Internalizing and Externalizing Behaviors

Children experience a great deal of development in middle childhood, including dramatic growth in emotion regulation abilities, coping strategies, and social cognitive skills. Children also are exposed to a much wider world and different environments than they may have known in early childhood. This can provide positive opportunities for their development such as new friendships, new mentors and teachers, and new hobbies or extracurriculars. However, for some children, this broadening set of environments, personal relationships, and

experiences can increase a child's risk of socioemotional struggles, such as bullying or sometimes difficult teacher-child or peer relationships.

While some children develop positive coping strategies, others may struggle with negative coping strategies that can in turn lead to some common behaviors that can be problematic for children's socioemotional well-being. Developmental psychologists and researchers often discuss and define these behaviors in terms of how they manifest and whether they are problematic for the child, teachers, and/or parents (Bordin et al., 2013). By identifying and understanding how these behaviors create problems and who they create problems for, psychologists can better design mental health supports that can reduce risk and promote resilience in children.

When a behavior is negative or harmful and internal to a person, psychologists often call it an **internalizing behavior**. Internalizing behaviors include feeling withdrawn or lonely, anxious or depressed, and/or having related physical health issues (Achenbach & Edelbrock, 1991; Bordin et al., 2013). For example, a child might struggle with anxiety in new and large social settings. This anxiety can include negative self-talk and fear of interacting with others and may even lead to physical problems such as an upset stomach or headaches. Internalizing behaviors could also include feelings of helplessness, low self-esteem, or any other negative feelings or thoughts that are mostly within the person (Aguilar-Yamuza et al., 2023; Wang et al., 2018).

When a behavior is negative or harmful and external to a person, psychologists often call it an **externalizing behavior**. Such behaviors include aggressive behaviors, rule-breaking behaviors, and other negative behaviors that are more social or interpersonal (Achenbach & Edelbrock, 1991; Bordin et al., 2013). For example, a child might struggle with angry feelings and acting out toward others in a bullying manner. These impulsive behaviors can be disruptive to others or disruptive to the social setting, such as in school environments (Woltering & Shi, 2016). Externalizing behaviors could also include inflated self-esteem, delinquent behaviors, or any other negative behaviors that typically involve interaction with others.

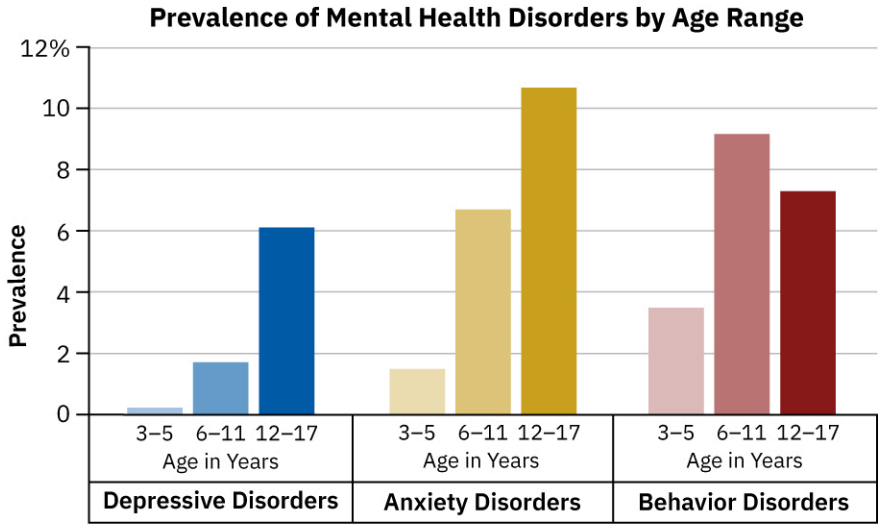
Often internalizing and externalizing behaviors may be the result of a child's continuing emotional regulation development or a lack of positive coping strategies. While many children primarily turn their negative behaviors either inward or outward, many children struggle with poor regulation and both internalizing and externalizing behaviors (Deutz et al., 2019). Sometimes children grow out of these behaviors as they mature and develop improved emotional regulation and/or through the support of caregivers and other community members (Baker, 2018; Deutz et al., 2019). However, for other children, this can be an early indication that a child is at risk of poor mental health or certain mental health disorders (Deutz et al., 2016; Nikstat & Riemann, 2020). By better understanding the immense transitions of middle childhood and how they can impact overall mental health, psychologists can better provide supports to promote socioemotional well-being in middle childhood and long-term development (Voss et al., 2023).

Mental Health Risks and Disorders

While some amount of internalizing and externalizing behaviors is fairly common over the life course for children and adults, for others, middle childhood can be a time when mental health risks and disorders are first exhibited and diagnosed. A U.S. study found that around 16.5 percent of children nationwide had at least one mental health disorder, with only half of those children receiving treatment and support (Whitney & Peterson, 2019). Common mental health risks and disorders that may begin in childhood include depression, anxiety, obsessive-compulsive disorder (OCD), post-traumatic stress disorder, and behavioral disorders such as oppositional defiant disorder (ODD) and conduct disorder (CD) (American Psychiatric Association, 2022; CDC, 2023a).

Research also indicates that childhood onset of some of these diagnoses, specifically depression and anxiety, have increased over time and may increase risks for mental health struggles and/or suicide across the lifespan (CDC, 2023b; Janiri et al., 2020). Factors that can increase risks of mental health disorders in childhood include emotion dysregulation, angry parenting, poor parent mental health, adverse childhood experiences,

and childhood trauma (Wang et al., 2018). Children may be at an even greater risk when they experience lower socioeconomic resources, such as poverty or inadequate health care, or systemic barriers related to race, ethnicity, or gender (CDC, 2023b, Thyberg & Lombardi, 2022). As indicated in the Figure 8.12, there is a dramatic increase in depression, anxiety, and behavior disorders beginning around age six years (CDC, 2023b).



Source: Children's Mental Health: Data and Statistics. (2023). Centers for Disease Control and Prevention.

FIGURE 8.12 Data from the Centers for Disease Control and Prevention show an increase in the percentage of U.S. children diagnosed with certain mental health disorders beginning during middle childhood (CDC, 2023b). (data source: Children's Mental Health: Data and Statistics and Centers for Disease Control and Prevention; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Some disorders such as anxiety, OCD, and depression not only start in middle childhood but are likely to be comorbid, or occur simultaneously (Cervin et al., 2020; CDC, 2023b). This means that children who are at risk of one disorder, such as depression, are likely to also be at a risk of other disorders. Often, **anxiety** is characterized by excessive and persistent fear and anxious feelings, and by related disturbances in behavior. Children may also experience, **depression** disorders, which are mood disorders involving feelings of sadness that are disruptive and can make functioning difficult for individuals (American Psychological Association, 2022). Depression, anxiety, and OCD can manifest with symptoms like stress, upset stomach, sleeping problems, self-esteem issues, and/or physical symptoms like headache or stomachache (American Psychological Association, 2022; Thapar et al., 2022). These disorders can also involve changes in sleeping or eating behaviors, though these symptoms may be less common in children than in adults. These disorders might also be underdiagnosed in children because the symptoms may be harder to observe.

Children of marginalized races, including Black children, are more likely to be underdiagnosed when it comes to things like depression and anxiety. In fact, they face a risk of being misdiagnosed or overdiagnosed with behavioral disorders such as ODD and CD (Thyberg & Lombardi, 2022). These behavioral disorders involve longer-term and high levels of some of the externalizing behaviors discussed earlier, such as hostility, aggressive behavior, and defiance (American Psychological Association, 2022). Some children might outgrow these behaviors, but in many cases, they can lead to low academic performance and poor social relationships. A diagnosis of ODD or CD can sometimes become a label that follows children as they move into adolescence and early adulthood. There is some concern that Black boys in particular might be overdiagnosed with this disorder because of bias and systemic racism (Ballentine, 2019).

Finally, middle childhood can mark the beginning of body dissatisfaction and body image issues that can lead

to a higher risk of eating disorders as children enter adolescence and early adulthood (Mendo–Lázaro et al., 2017; Neves et al., 2017). As children enter middle childhood, they become more aware of their body in comparison to others, the media, and other cultural influences they experience (Rice et al., 2016). Some researchers suggest that middle childhood may be a critical time for early prevention of self-esteem and body image issues (Neves et al., 2017). For example, some early prevention strategies include parents modeling a healthy body image through focusing on overall health and well-being rather than numbers like weight (Jensen et al., 2018).

Neurodevelopmental Diversity

During early and middle childhood, neurodevelopmental disorders are often first recognized as children enter grade school and the environmental demands on their behavior increase.

Attention-Deficit/Hyperactivity Disorder

As discussed in Chapter 7 Physical and Cognitive Development in Middle Childhood (Ages 7 to 12), attention-deficit/hyperactivity disorder (ADHD) is often first diagnosed during middle childhood. Increased academic demands require more attention and self-regulation from children. Children with ADHD often struggle to adjust to school and academic demands (Sánchez–Perez & González–Salinas, 2017). Children with ADHD often struggle to adjust to school and academic demands and are at a higher risk of having poor relationships with teachers (Sánchez–Perez & González–Salinas, 2017; Zendarski et al., 2020). This means teachers might be the first to notice symptoms and refer a child for assessment and support (Tahıllıoğlu et al., 2021). While teachers may be trained in detecting a need for assessment, they do not and cannot diagnose ADHD themselves.

Children with ADHD may be at a higher risk of increased socioemotional difficulties and symptoms based on family dynamics and caregiving. For example, children with more ADHD symptoms are more likely to have a caregiver with poorer parenting behaviors and/or a caregiver who has a mental health disorder (Breaux & Harvey, 2019; Dekkers et al., 2021). Greater ADHD symptoms can also be disruptive to positive family interactions for both caregivers and children. Educational opportunities for parents to improve their positive parenting techniques show some evidence of improving well-being for children and families with ADHD (Haack et al., 2017). For example, parents might benefit from receiving support and education that improve their ability to set clear expectations with their children, avoid power struggles, and effectively praise children when they are doing well.

Children with ADHD also often have difficulties with peer relationships (Powell et al., 2020). More than half struggle to make and maintain friendships (Gardner & Gerdes, 2015). They may stumble when reading social cues, such as when another child is growing weary of hyperactivity and intensity in their social interactions. As a result, children with ADHD are more likely to be rejected by peers or to experience peer victimization or bullying (Chou et al., 2018). Interventions and preventions that help caregivers and children with ADHD improve their social and academic skills may reduce other long-term mental health risks, such as depression (Evans et al., 2018).

Attention-deficit/hyperactivity disorder is also comorbid with (frequently occurring with) other disorders, including anxiety, depression, and conduct disorder (Koyuncu et al., 2022). Children with ADHD are also more likely to have a conduct disorder (27 percent) or a learning disability (46 percent) (Larson et al., 2011). When children with ADHD have comorbid mental health issues, they are more likely to have poor academic outcomes. Children with ADHD who experience better environmental support, such as school and community resources, are more likely to show improved outcomes (Shabat et al., 2021). For example, ensuring teachers and parents are effectively trained on the child's cognitive and sensory needs may improve their overall well-being.

LINK TO LEARNING

Kirsten Weir discusses the connection between ADHD and difficulties with emotional regulation

(https://openstax.org/r/104EmotRegultn) in this article in the APA *Monitor*. The author talks about the link between these in terms of both the underlying neurobiology of neurodivergent brains and the environmental demands placed on individuals with ADHD. Treatments are also discussed.

Autism Spectrum Disorder

Socioemotional challenges often face children experiencing autism spectrum disorder (ASD). As introduced in 6.1 Social and Emotional Development in Early Childhood, one feature of an autism diagnosis is difficultly with social communication and interaction. For example, these children may have increased difficulties recognizing and understanding the emotions of others (Fridenson–Hayo et al., 2016; Gev et al., 2021). They may also express their emotions in ways that are harder for others to interpret, resulting in trouble forming peer relationships and friendships. Social skills training programs, in particular, have been useful in helping autistic children develop important capabilities (Odom et al., 2021). For example, some promising interventions that may improve emotional expression include using robots or computers to train children on emotion recognition and expression (Lecciso et al., 2021).

Caregivers often describe their autistic children as having difficulty with expressing emotions and poorer emotion regulation skills (Reyes et al., 2020). Autistic children often show normal attachment behaviors with their caregivers, though some may struggle with aspects of attachment, including using their caregiver as a secure base, using their caregiver as a source of support in emotion regulation, and/or forming mental attachment representations (Keenan et al., 2017; Giannotti et al., 2022). The challenges of raising an autistic child when they struggle with communication and language skills may also increase parent stress (Stanojevic et al., 2017). Caregivers of autistic children are likely to report higher levels of stress than parents of typically developing children (Padden & James, 2017). Among these, African American caregivers report higher levels of stress than Euro American caregivers, particularly when they experience less cultural belonging (Williams et al., 2019).[8] Hispanic parents cite the lowest stress, perhaps because they also report higher levels of psychological well-being and greater satisfaction living with their child (Valicenti–McDermott et al., 2015). Promoting well-being for parents and in the family household may be beneficial to reducing familial stress for families and caregivers.

Diagnoses of ASD have risen rapidly, and society's response and understanding have varied (Anthony et al., 2019). There is more inclusion for autistic children thanks to strong advocacy efforts; however, autistic individuals still experience isolation and discrimination. Many programs are working to decrease the stigma and stereotypes and increase acceptance of those with ASD (Anthony et al., 2019).

Supports for Promoting Well-Being and Resilience in Middle Childhood

Many individual differences, developmental diversities, and mental health risks may put some children at a higher risk of long-term mental health problems and/or other maladaptive, or poor, health outcomes. You've learned about various interventions may benefit the individual child or their family in reducing these risks. Researchers have also identified protective factors that can promote well-being and resilience for children.

Many supports and protective factors for promoting socioemotional health in middle childhood involve promoting certain skills in the individual child such as positive coping, social skills that improve friendships, and emotional regulation. Still, many developmental psychologists and researchers advocate for promoting a goodness of fit and a supportive set of environments and contexts for the child. For example, you may recall the importance during early childhood of the role of parents in promoting a good fit between young children's temperament and their environment. When children feel supported and scaffolded by their environment, including caregivers, teachers, schools, and community supports, they are more like to be resilient (Masten, 2014).

The first important context to promote protective factors in middle childhood is at the family or caregiver

8 This study (Williams et al., 2019) uses the terms "African American" and "Euro American."

level, an important microsystem. Caregivers can promote resilience and boost protective factors for their children by teaching emotional regulation, modeling positive coping, and providing warm, supportive parenting (Kural & Kovacs, 2021). Caregivers might also benefit from parent skills training to reduce their parenting stress and improve their confidence as caregivers (Aguilar–Yamuza et al., 2023). They might also seek mental health supports including private counselors, therapists, or support groups, particularly if the child is struggling with internalizing or externalizing behaviors or has experienced a trauma or adversity (Cervin et al., 2020; Janiri et al., 2021). Finally, parents can promote an overall healthy lifestyle including healthy body image and good family routines that support sleep, exercise, and physical health (Voss et al., 2023). Every child's mental health needs are unique, but caregivers have many options for supporting them.

Another important context that can reduce risks, promote protective factors, and support resilience in childhood is the school and teachers (Janiri et al., 2020). Schools can create individual interventions and support for children with disabilities or other exceptional needs by using individualized education programs (IEPs) and other referrals to individual supports as discussed in 7.4 Contexts: School and Learning Diversity in Middle Childhood. In the United States, children with disabilities or other mental health diagnoses that affect their learning are entitled to free and appropriate education by law (Edsource, 2022). Parents and teachers can refer children for services or assessment by a school psychologist, trained in best determining the specific needs of that child (NASP, 2024). Approximately 14 percent of U.S. children receive some special education services in public schools (National Center for Education Statistics, 2022). Because these are provided free of charge for any eligible student, many children benefit from therapies they would not otherwise receive because they are too expensive for many families.

Children can also benefit from improved resilience when interventions and support involve multiple community levels, often involving mesosystems and exosystems. For example, communities and schools can work together to create and promote engagement in PYD programs. These can be implemented by community organizations, nonprofit organizations, or mentor programs. Schools can also provide curriculum and programs that support social-emotional learning and protective factors such as self-regulation and problem-solving skills (Wallender et al., 2020). These programs are likely to benefit all children, including those who might not otherwise be detected as needing services or whose symptoms may have been less visible.

LIFE HACKS

Do You Want to Make the Difference in the Life of a Child?

Many children can benefit from having a positive role model or just another caring adult in their life. Children with internalizing or externalizing behaviors and those who struggle with academics might especially benefit from having a mentor (DuBois et al., 2018; McQuillin et al., 2015). Mentoring relationships can be either informal, occurring naturally as children interact with adults in their lives, or formal like the organized mentorship programs of Big Brothers Big Sisters of America. Child mentoring programs are designed to provide children with a volunteer nonparental positive role model, matching them with someone who can regularly spend time with them.

One of the major benefits of mentoring programs is that they are widely accepted and as a result serve many children who would otherwise not receive any services (Hagler et al., 2019). For example, caregivers from marginalized groups are more likely to allow their children to take part in a mentoring program than to opt for services from professionals like mental health practitioners (Vázquez & Villodas, 2019). The success of mentoring programs depends on volunteers who are willing to donate a few hours a month to develop a relationship with a child.

Are you interested in making a difference in the life of a child? Consider starting by looking up the local nonprofit organizations that serve youth in your city or region. If you live in the United States, you may also want to check out the MENTOR National (https://openstax.org/r/104MENTORNatnl) website.

Finally, at the macrosystem level, cultural beliefs and education can reduce risk and promote resilience for children who may be at a higher risk due to systemic disparities or those who have experienced adverse risks. For example, research has identified racial and ethnic disparities in the diagnosis of many mental and behavioral health disorders (Thyberg & Lombardi, 2022). In addition, cultural differences in attitudes toward mental health services often mean that some families, including Black families, are less likely to seek services for mental health and/or behavioral disorders (Ballentine, 2019).[9] Better training for health professionals and those working with children can improve accurate diagnosis and treatment for children across a variety of externalizing and internalizing behaviors. Providing multiple sources of support and promoting protective factors at various levels can better promote well-being and resilience in middle childhood and across the lifespan for all.

LINK TO LEARNING

Nadine Burke Harris talks about how childhood trauma affects lifelong health (https://openstax.org/r/104HealthTrauma) in this TEDTalk. This talk illustrates the multiple contexts and issues for children's health and development in general.

References

Achenbach, T. M., & Edelbrock, C. (1991). *Child Behavior Checklist.* Burlington, VT: University of Vermont, Department of Psychiatry. https://doi.org/10.1007/978-0-387-79948-3_1529

Aguilar–Yamuza, B., Herruzo–Pino, C., Lucena–Jurado, V., Raya–Trenas, A. F., & Pino–Osuna, M. J. (2023). Internalizing problems in childhood and adolescence: The role of the family. *Alpha Psychiatry*, *24*(3), 87–92. https://doi.org/10.5152/alphapsychiatry.2023.221086

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Anthony, B. J., Robertson, H. A., Verbalis, A., Myrick, Y., Troxel, M., Seese, S., & Anthony, L. G. (2019). Increasing autism acceptance: the impact of the Sesame Street "See amazing in all children" initiative. *Autism*, *24*(1), 95–108. https://doi.org/10.1177/1362361319847927

Baker, S. (2018). The effects of parenting on emotion and self–regulation. In M. Sanders & A. Morawska (Eds.), *Handbook of parenting and child development across the lifespan* (pp. 217–240). Springer. https://doi.org/10.1007/978-3-319-94598-9_10

Ballentine, K. L. (2019). Understanding racial differences in diagnosing ODD versus ADHD using Critical Race Theory. *Families in Society*, *100*(3), 282–292. https://doi.org/10.1177/1044389419842765

Bordin, I. A., Rocha, M. M., Paula, C. S., Teixeira, M. C., Achenbach, T. M., Rescorla, L. A., & Silvares, E. F. (2013). Child Behavior Checklist (CBCL),Youth Self-Report (YSR) and Teacher's Report Form(TRF): an overview of the development of the original and Brazilian versions. *Cadernos de Saúde Pública*, *29*(1), 13–28. https://doi.org/10.1590/s0102-311x2013000100004

Breaux, R. P., & Harvey, E. A. (2019). A longitudinal study of the relation between family functioning and preschool ADHD symptoms. *Journal of Clinical Child & Adolescent Psychology*, *48*(5), 749–764. https://doi.org/10.1080/15374416.2018.1437737

CDC. (2023a). Children's mental disorders. https://www.cdc.gov/childrensmentalhealth/symptoms.html

CDC. (2023b). Data and statistics on children's mental health. https://www.cdc.gov/childrensmentalhealth/data.html

Cervin, M., Pozza, A., Barcaccia, B., & Dèttore, D. (2020) Internalized psychopathology dimensions in middle childhood: Cross–sectional and temporal associations, *Journal of Anxiety Disorders, 76*, 102300. https://doi.org/10.1016/j.janxdis.2020.102300

Chou, W. J., Liu, T. L., Yang, P., Yen, C. F., & Hu, H. F. (2018). Bullying victimization and perpetration and their correlates in adolescents clinically diagnosed with ADHD. *Journal of Attention Disorders*, *22*(1), 25–34. https://doi.org/10.1177/1087054714558874

Dekkers, T. J., Hornstra, R., van den Hoofdakker, B. J., de Jong, S. R. C., Schaaf, J. V., Bosmans, G., & van der Oord, S. (2021). Attachment representations in children with and without attention–deficit/hyperactivity disorder (ADHD). *Brain Sciences, 11*(11), Article 1516. https://doi.org/10.3390/brainsci11111516

Deutz, M. H., Geeraerts, S. B., van Baar, A. L., Deković, M., & Prinzie, P. (2016). The dysregulation profile in middle childhood and adolescence across reporters: factor structure, measurement invariance, and links with self–harm and suicidal ideation. *European Child & Adolescent Psychiatry*, *25*, 431–442. https://doi.org/10.1007/s00787-015-0745-x

Deutz, M. H., Woltering, S., Vossen, H. G., Deković, M., van Baar, A. L., & Prinzie, P. (2019). Underlying psychophysiology of dysregulation: Resting heart rate and heart rate reactivity in relation to childhood dysregulation. *Journal of the American Academy of Child & Adolescent Psychiatry*, *58*(6), 589–599. https://doi.org/10.1016/j.jaac.2018.09.434

DuBois, D. L., Herrera, C., & Higley, E. (2018). Investigation of the reach and effectiveness of a mentoring program for youth receiving outpatient mental health services. *Children and Youth Services Review*, 91, 85–93. https://doi.org/10.1016/j.childyouth.2018.05.033

Edsource (2022). Parents' guide to 504 plans and IEPs: What they are and how they're different | *EdSource*. https://edsource.org/2022/parents-guide-to-504-plans-and-ieps-what-they-are-and-how-theyre-different/669493

Evans, S. W., Owens, J. S., Wymbs, B. T., & Ray, A. R. (2018). Evidence–based psychosocial treatments for children and adolescents with attention deficit/hyperactivity disorder. *Journal of Clinical Child & Adolescent Psychology*, *47*(2), 157–198. https://doi.org/10.1080/15374416.2013.850700

Fridenson–Hayo, S., Berggren, S., Lassalle, A., Tal, S., Pigat, D., Bölte, S., Baron–Cohen, S., & Golan, O. (2016). Basic and complex emotion recognition in children with autism: cross-cultural findings. *Molecular Autism*, *7*(1), 1–11. https://doi.org/10.1186/s13229-016-0113-9

Gardner, D. M., & Gerdes, A. C. (2015). A review of peer relationships and friendships in youth with ADHD. *Journal of Attention Disorders*, *19*(10), 844–855. https://doi.org/10.1177/1087054713501552

Gev, T., Avital, H., Rosenan, R., Aronson, L. O., & Golan, O. (2021). Socio emotional competence in young children with ASD during interaction with their typically developing peers. *Research in Autism Spectrum Disorders*, *86*(3), Article 101818. https://doi.org/10.1016/j.rasd.2021.101818

Giannotti, M., Bentenuto, A., Venuti, P., & De Falco, S. (2022). Explicit and implicit attachment representations in cognitively able school-age children with autism spectrum disorder: A window to their inner world. *Clinical Child Psychology and Psychiatry, 27*(4), 1048-1064.

Haack, L. M., Villodas, M., McBurnett, K., Hinshaw, S., & Pfiffner, L. J. (2017). Parenting as a mechanism of change in psychosocial treatment for youth with ADHD, predominantly inattentive presentation. *Journal of Abnormal Child Psychology*, *45*(5), 841–855. https://doi.org/10.1007/s10802-016-0199-8

Hagler, M., Raposa, E. B., & Rhodes, J. (2019). Psychosocial profiles of youth who acquire a natural mentor during a school year. *Applied Developmental Science*, 23(2), 144–152. https://doi.org/10.1080/10888691.2017.1342539

Janiri, D., Doucet, G. E., Pompili, M., Sani, G., Luna, B., Brent, D. A., & Frangou, S. (2020). Risk and protective factors for childhood suicidality: a US population–based study. *The Lancet Psychiatry*, *7*(4), 317–326. https://doi.org/10.1016/S2215-0366(20)30049-3

Janiri, D., Moccia, L., Dattoli, L., Pepe, M., Molinaro, M., De Martin, V., Chieffo, D., Di Nicola, M., Fiorillo, A., Janiri, L., & Sani, G. (2021). Emotional dysregulation mediates the impact of childhood trauma on psychological distress: First Italian data during the early phase of COVID-19 outbreak. *Australian & New Zealand Journal of Psychiatry*, *55*(11), 1071–1078. https://doi.org/10.1177/0004867421998802

Jensen, M., Savoie–Roskos, M. R., Neid–Avila, J., & Bingeman, B. (2018). Tips to encourage a healthy body image in your child. *Utah State University Extension.* https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=2879&context=extension_curall

Keenan, B. M., Newman, L. K., Gray, K. M., & Rinehart, N. J. (2017). A qualitative study of attachment relationships in ASD during middle childhood. *Attachment & Human Development, 19*(1), 1–21. https://doi.org/10.1080/14616734.2016.1246580

9 This study (Ballentine, 2019) uses the terms "Black" and "White."

Koyuncu, A., Ayan, T., İnce Guliyev, E., Erbilgin, S., & Deveci, E. (2022). ADHD and anxiety disorder comorbidity in children and adults: Diagnostic and therapeutic challenges. *Current Psychiatry Reports*, *24*(2), 129–140. https://doi.org/10.1007/s11920-022-01324-5
Kural, A. I., & Kovacs, M. (2021). Attachment anxiety and resilience: The mediating role of coping. *Acta Psychologica*, *221*, Article 103447. https://doi.org/10.1016/j.actpsy.2021.103447
Larson, K., Russ, S. A., Kahn, R. S., & Halfon, N. (2011). Patterns of comorbidity, functioning, and service use for US children with ADHD, 2007. *Pediatrics*, *127*(3), 462–470. https://doi.org/10.1542%2Fpeds.2010-0165
Lecciso, F., Levante, A., Fabio, R. A., Caprì, T., Leo, M., Carcagnì, P., Distante, C., Mazzeo, P. L., Spagnolo, P., & Petrocchi, S. (2021). Emotional expression in children with ASD: A pre–study on a two–group pre–post–test design comparing robot–based and computer–based training. *Frontiers in Psychology*, *12*, Article 678052. https://doi.org/10.3389/fpsyg.2021.678052
Masten, A. S. (2014). *Ordinary magic: Resilience in development*. Guilford publications.
McQuillin, S., Strait, G., Smith, B., & Ingram, A. (2015). Brief instrumental school–based mentoring for first–and second–year middle school students: A randomized evaluation. *Journal of Community Psychology*, 43(7), 885–899. https://doi.org/10.1002/jcop.21719
Mendo–Lázaro, S., Polo–del–Río, M. I., Amado–Alonso, D., Iglesias–Gallego, D., & León–del–Barco, B. (2017). Self–concept in childhood: The role of body image and sport practice. *Frontiers in Psychology*, *8*, Article 853. https://doi.org/10.3389/fpsyg.2017.00853
National Association of School Psychologists. (2024). Who are school psychologists? *Who Are School Psychologists*. Retrieved 07/01/24, from https://www.nasponline.org
National Center for Education Statistics. (2022). *Number and percentage of children served under Individuals with Disabilities Education Act (IDEA), Part B, by age group and state or jurisdiction: Selected years, 1990-91 through 2018-19*. Retrieved from https://nces.ed.gov/programs/digest/d19/tables/dt19_204.70.asp
Neves, C. M., Cipriani, F. M., Meireles, J. F. F., Morgado, F. F. D. R., & Ferreira, M. E. C. (2017). Body image in childhood: An integrative literature review. Imagem Corporal na Infância: Uma revisão integrativa da literatura. *Revista Paulista de Pediatria: Orgão Oficial da Sociedade de Pediatria de São Paulo, 35*(3), 331–339. https://doi.org/10.1590/1984-0462/;2017;35;3;00002
Nikstat, A., & Riemann, R. (2020). On the etiology of internalizing and externalizing problem behavior: A twin-family study. *PLOS ONE*, *15*(3), Article e0230626. https://doi.org/10.1371/journal.pone.0230626
Odom, S. L., Hall, L. J., Morin, K. L., Kraemer, B. R., Hume, K. A., McIntyre, N. S., Nowell, S. W., Steinbrenner, J. R., Tomaszewski, B., Sam, A. M., & DaWalt, L. (2021). Educational interventions for children and youth with autism: A 40-year perspective. *Journal of Autism and Developmental Disorders*, 1-16. https://doi.org/10.1007/s10803-021-04990-1
Padden, C., & James, J. (2017). Stress among parents of children with and without autism spectrum disorder: A comparison involving physiological indicators and parent self–reports. *Journal of Developmental & Physical Disabilities, 29*, 567–586. https://doi.org/10.1007/s10882-017-9547-z
Powell, V., Riglin, L., Hammerton, G., Eyre, O., Martin, J., Anney, R., Thaper, A., & Rice, F. (2020). What explains the link between childhood ADHD and adolescent depression? Investigating the role of peer relationships and academic attainment. *European Child & Adolescent Psychiatry 29*, 1581–1591. https://doi.org/10.1007/s00787-019-01463-w
Reyes, N.M., Factor, R. & Scarpa, A. (2020). Emotion regulation, emotionality, and expression of emotions: A link between social skills, behavior, and emotion problems in children with ASD and their peers. *Research in Developmental Disabilities, 106*, Article 103770. https://doi.org/10.1016/j.ridd.2020.103770
Rice K., Prichard I., Tiggemann M., Slater A. (2016). Exposure to barbie: effects on thin-ideal internalisation, body esteem, and body dissatisfaction among young girls. *Body Image, 19*, 142–149. https://doi.org/10.1016/j.bodyim.2016.09.005
Sánchez–Pérez, N., & González–Salinas, C. (2013). School adjustment of pupils with ADHD: cognitive, emotional and temperament risk factors. *Electronic Journal of Research in Education Psychology*, *11*(30), 527–550. https://doi.org/10.14204/ejrep.30.12189
Shabat, T., Fogel-Grinvald, H., Anaby, D., & Golos, A. (2021). Participation profile of children and youth, aged 6–14, with and without ADHD, and the impact of environmental factors. *International Journal of Environmental Research and Public Health*, *18*(2), 537. https://doi.org/10.3390/ijerph18020537
Stanojević, N., Nenadović, V., Fatić, S., & Stokić, M. (2017). Exploring factors of stress level in parents of children with autistic spectrum disorder. *Specijalna Edukacija I Rehabilitacija, 16,* 445–463. http://dx.doi.org/10.5937/specedreh16-13861
Tahıllıoğlu, A., Bilaç, Ö., Uysal, T., & Ercan, E. S. (2021). Who predict ADHD with better diagnostic accuracy?: Parents or teachers? *Nordic Journal of Psychiatry*, *75*(3), 214–223. https://doi.org/10.1080/08039488.2020.1867634
Thapar, A., Eyre, O., Patel, V., & Brent, D. (2022). Depression in young people. *The Lancet*, *400*(10352), 617–631. https://doi.org/10.1016/s0140-6736(22)01012-1
Thyberg, C. T., & Lombardi, B. M. (2022). Internalizing and externalizing diagnoses for children exposed to adverse childhood experiences. *Clinical Social Work Journal, 50*(3), 286–296. https://doi.org/10.1007/s10615-022-00842-2
Valicenti–McDermott, M., Lawson, K., Hottinger, K., Seijo, R., Schechtman, M., Shulman, L., & Shinnar, S. (2015). Parental stress in families of children with autism and other developmental disabilities. *Journal of Child Neurology, 30*(13), 1728–1735. https://doi.org/10.1177/0883073815579705
Vázquez, A. L., & Villodas, M. T. (2019). Racial/ethnic differences in caregivers' perceptions of the need for and utilization of adolescent psychological counseling and support services. *Cultural Diversity & Ethnic Minority Psychology, 25*(3), 323–330. https://doi.org/10.1037/cdp0000255
Voss, M. L., Claeson, M., Bremberg, S., Peterson, S. S., Alfvén, T., & Ndeezi, G. (2023). The missing middle of childhood. *Global Health Action*, *16*(1), Article 2242196. https://doi.org/10.1080/16549716.2023.2242196
Wallender, J. L., Hiebel, A. L., PeQueen, C. V., & Kain, M. A. (2020). Effects of an explicit curriculum on social–emotional competency in elementary and middle School Students. *Delta Kappa Gamma Bulletin*, *86*(3), 32–43. https://www.proquest.com/docview/2457214831?pq-origsite=gscholar&fromopenview=true&sourcetype=Scholarly%20Journals
Wang, C., Williams, K. E., Shahaeian, A., & Harrison, L. J. (2018). Early predictors of escalating internalizing problems across middle childhood. *School Psychology Quarterly, 33*(2), 200–212. https://doi.org/10.1037/spq0000218
Whitney, D. G., & Peterson, M. D. (2019). US national and state-–level prevalence of mental health disorders and disparities of mental health care use in children. *JAMA Pediatrics*, *173*(4), 389–391. https://doi.org/10.1001/jamapediatrics.2018.5399
Williams, T. V., Hartmann, K., Paulson, J. F., Raffaele, C. T., & Urbano, M. R. (2019). Life after an autism spectrum disorder diagnosis: A comparison of stress and coping profiles of African American and Euro–American caregivers. *Journal of Autism and Developmental Disorders, 49*(3), 1024–1034. https://doi.org/10.1007/s10803-018-3802-8
Woltering, S., & Shi, Q. (2016). On the neuroscience of self-regulation in children with disruptive behavior problems: Implications for education. *Review of Educational Research*, *86*(4), 1085–1110. https://doi.org/10.3102/0034654316673722
Zendarski, N., Haebich, K., Bhide, S., Quek, J., Nicholson, J. M., Jacobs, K. E., Efron, D., & Sciberras, E. (2020). Student–teacher relationship quality in children with and without ADHD: A cross–sectional community based study. *Early Childhood Research Quarterly*, *51*, 275–284. https://doi.org/10.1016/j.ecresq.2019.12.006

Key Terms

altruism type of prosocial behavior involving acts of kindness even when at a cost
anxiety disorder characterized by excessive and persistent fear and anxious feelings, and by related disturbances in behavior
average child child who receives a smaller number of both positive and negative nominations
bullying repetitive pattern of aggression in which a person with more power harms another with less
classroom climate emotional culture of the learning environment
controversial child child who receives a high number of positive and negative nominations
coping strategy technique for overcoming stress
depression mood disorder involving feelings of sadness that are disruptive and can make functioning difficult for individuals
emotional display rule culturally and context-specific defined social rule for outwardly displaying emotion
empathy complex emotional state requiring an understanding of the perspective and emotional states of others as well as caring about others and mirroring their emotions
externalizing behavior behavior that is negative or harmful and external to a person, including aggressive behavior, rule breaking, and other negative behaviors that are more social or interpersonal
industry versus inferiority Erikson's fourth psychosocial stage of development, describing the way children construct their sense of success and accomplishment in work tasks, such as school
internalizing behavior behavior that is negative or harmful and internal to a person, including feeling withdrawn or lonely, anxious or depressed, and/or having related physical health issues
peer-neglected child child who receives a low number of both positive and negative nominations
physical aggression inflicting of intentional harm on others or property, or the intimidation of or threat of harm to people and property
popular child child who receives a high number of positive nominations, a low number of negative nominations, and is well liked in their classroom
positive youth development (PYD) movement that aims to understand and promote predictors of well-being, thriving, and prosocial development in childhood and beyond
proactive aggression aggression that is intentional and committed to harm others
reactive aggression unplanned aggression that happens in response to either a real or imagined provocation
rejected child child who receives a low number of positive nominations and a high number of negative nominations and might be actively excluded
relational aggression behaviors that are intended to hurt social relationships such as intentional exclusion, spreading of rumors, betrayal of friendships, and manipulative control
resilience ability to successfully adapt and respond to stressful events
social competence skill used to understand and respond to the differing expectations of various contexts and audiences
sympathy awareness of how the other might be feeling, in addition to a motivation to do something for the other person

Summary

8.1 Identity, Self-Concept, and Self-Esteem in Middle Childhood

- The psychosocial theory of development contends that the main dilemma children face in middle childhood is Erikson's industry versus inferiority, in which industry is the desirable outcome and is fostered by positive school and family experiences.
- Self-concept becomes more complex, abstract, and evaluative as children move into middle childhood.
- Social experiences at school, with peers, and at home influence self-concept, self-esteem, and various aspects of identity at this age.
- Gender, ethnic, and racial identities are a fundamental aspect of self-concept and begin to develop during middle childhood.

8.2 Emotional Development and Socioemotional Learning in Middle Childhood

- Skills that allow children to develop emotional intelligence and emotion regulation during middle childhood include emotional awareness and coping strategies, which can increase resilience and positive coping in children.
- Interactions with supportive caregivers allow children to regulate their emotions in multiple settings and to learn and follow emotional display rules.
- Children are also developing more complex and multifaceted social cognition skills. They use coping techniques that can help them to develop resilience and adapt in the face of adversity.
- Social skills and relationship building require empathy, sympathy, altruism, and cooperation.
- During middle childhood, moral reasoning gradually moves from a focus on how moral decisions directly affect the doer to an understanding of how they can benefit society and ultimately humanity.

8.3 Social Contexts: Peers, Family, and Media in Middle Childhood

- Friendships in middle childhood continue to be based on proximity and similarity, but children's choices of friends become more complex and multifaceted.
- Social relationships take on a larger role in middle childhood. Researchers can classify children's evaluations of each other as average, popular, rejected, neglected, or controversial based on sociometric nominations they gather.
- Aggression can be proactive (goal oriented) or reactive (expression of frustration or anger in response to provocation).
- Children might engage in or be victimized by physical, social/relational, or verbal aggression. The outcomes of severe bullying and cyberbullying can be damaging and lasting.
- Media is pervasive in children's lives, and children spend more time engaged with screens than they did in early childhood.
- Digital media usage has both positive and negative effects on development.

8.4 Context: School and Extracurricular Activities in Middle Childhood

- School climate affects the way in which children learn and how happy and successful they are as students.
- School climate and teacher-student relationships can both vary dramatically based on marginalized or disadvantaged statuses including SES, racial differences, and any implicit bias in school and community.
- The PYD movement uses a strengths-based model to focus on helping children develop by using their existing resources.

8.5 Atypical Development and Interventions in Middle Childhood

- Children may begin to face increased risks of internalizing and externalizing behavior problems, particularly when they struggle with emotional regulation or environmental risks.
- Common mental health disorders that are more likely to be diagnosed in middle childhood include things like depression, anxiety, and behavioral disorders.
- Children with ADHD may have specific needs related to supporting their socioemotional well-being in middle childhood, particularly in peer interactions and school environments.
- Children with ASD may benefit from emotional expression and regulation training and supports to better reduce risks related to communication and social difficulties.
- Some mental health diagnoses and risks may be very context or environment dependent, which in turn means children with adverse childhood experiences, low income, or marginalized status may be at a higher risk of poor outcomes.
- Supports that promote resilience and protective factors can be implemented in a variety of contexts, including through families, teachers, caregivers, schools, and communities.

Review Questions

1. Children of color, in particular, are typically able to identify and describe racial stereotypes by the age of _____ years.
   a. 6
   b. 8
   c. 10
   d. 12

2. In middle childhood, social comparisons are used by children to determine if they are superior, average, or inferior in a number of areas. Some of the most salient ones during this time frame include all but *which* of these choices?
   a. athletic ability
   b. academic skill
   c. social status
   d. musical ability

3. Erikson's fourth psychosocial stage of development might be summarized by the expression "striving for competence." In Erikson's terminology, competence is another term for _____.
   a. industry
   b. identity
   c. autonomy
   d. inferiority

4. During which ages of childhood do kids tend to be most rigid about their gender stereotypes?
   a. 2 to 3 years
   b. 4 to 5 years
   c. 6 to 8 years
   d. 9 to 11 years

5. An example of an other-evaluative emotion is _____.
   a. happiness
   b. pride
   c. embarrassment
   d. compassion

6. Duewa shows high-energy excitement with her friends at a birthday party but recognizes this behavior is inappropriate at temple. She is demonstrating a knowledge of _____.
   a. social comparison
   b. internalization
   c. emotional display rules
   d. industry

7. Ten-year-old Jasmine is frustrated by the teacher's expectation that she memorize her times tables, and she reacts by throwing her pencil box on the floor. Jasmine is employing _____.
   a. self-regulation
   b. internal coping techniques
   c. emotional display rules
   d. external coping techniques

8. In which of Piaget's proposed stages of moral reasoning do children become more flexible in their

thinking, which allows them to consider a moral situation as well as others' perspectives?

a. the first stage
b. the second stage
c. the third stage
d. the fourth stage

9. In middle childhood experts recommend that youngsters consume no more than _____ hours of television per day.

a. 2
b. 3
c. 4
d. 5

10. Razia is nominated by many kids in her class as someone they would not like to spend time with, and by none as someone they would spend time with. Razia would be considered to be a _____ child.

a. popular
b. neglected
c. rejected
d. controversial

11. The act of threatening another person's peer status by gossiping about them is an example of _____ aggression, a form that is more likely to be experience by girls than by boys.

a. physical
b. relational
c. verbal
d. emotional

12. As children make their way through middle childhood on the way toward adolescence, their parents' primary role becomes _____.

a. providing companionship
b. disciplining
c. instructing
d. nurturing

13. In elementary schools, children receive instruction that is increasingly focused on _____.

a. skills assessed on standardized tests
b. abstract thinking and reasoning
c. growing beyond established theories
d. learning adaptive life skills

14. Xinyi has a close relationship with his teacher. What will be the most likely result of that warm teacher-student bond?

a. He is excited to see his teacher.
b. He is often disengaged during the school day.
c. He is nervous about attending school.
d. He is overly dependent on his teacher during the school day.

15. Sharice is able to complete her homework despite many hours of athletic practice. You can say that Sharice has .

a. an IQ that would test in the gifted range

b. a negative teacher-child relationship
c. a positive teacher-child relationship
d. controversial development

16. How does the positive youth development approach utilize a strength based model to help children?
a. by encouraging adequate physical activity and fitness
b. by focusing on academic success and skill
c. by encouraging children to befriend others with greater skill then they possess
d. by teaching children to use their existing resources

17. Difficulty with social interaction and challenges in recognizing and understanding the emotions of others are characteristic of
a. attention-deficit/hyperactivity disorder
b. autism spectrum disorder
c. oppositional defiant disorder
d. major depressive disorder

18. The symptoms of depression in middle childhood include
a. intrusive thoughts that lead to ritualistic behaviors
b. unreasonable fears that have no obvious trigger
c. physical symptoms like headache or stomachache
d. disobedience of authority

19. School professionals responsible for assessing the educational needs of children are
a. social workers
b. guidance counselors
c. school psychologists
d. educational psychologists

Check Your Understanding Questions

20. How do self-concept, self-esteem, and self-efficacy differ?

21. What is the primary challenge children face during Erikson's industry versus inferiority stage?

22. How does emotion regulation help children during middle childhood? How are metacognitive skills related to development of emotion regulation?

23. According to Piaget, how does moral reasoning develop during middle childhood? What were Piaget's two stages of moral reasoning?

24. In what ways is bullying different from cyberbullying?

25. In what ways do parent-child relationships change in middle childhood? In what ways do they stay the same?

26. What is classroom climate? What aspects of the classroom climate support positive socioemotional development for children?

27. What is a dependent teacher-child relationship? Why might this relationship form?

28. List the steps in constructing an individualized education program.

29. Describe internalizing and externalizing behaviors that may be seen during middle childhood.

Personal Application Questions

30. Think back to a time in your childhood when you were faced with a task that seemed challenging at first. How did you feel when you eventually succeeded, or how did it affect you if you struggled? Reflect on how this experience relates to Erikson's concept of industry versus inferiority.

31. Reflect on an instance when you felt particularly confident or unsure about your abilities in a specific area, such as academics, sports, or social interactions. How do you think this experience influenced your self-esteem and self-efficacy during middle childhood?

32. Consider your understanding of gender roles during your childhood. How did your views align or contrast with societal expectations, and how did they influence your gender identity? Reflect on how this understanding evolved as you grew older.

33. Reflect on your experiences with race and ethnicity during middle childhood. How did your racial or ethnic identity develop during this time, and how were these aspects of your identity influenced by your family, peers, and community?

34. Reflect on a time during your elementary school years when you had to manage your emotions in a social situation, such as giving a presentation or working on a group project. How did you handle your emotions? In what ways do you think your social skills at that time influenced your ability to manage your emotions effectively?

35. Think about a recent situation where you had to regulate your emotions, such as dealing with frustration or disappointment. Compare how you manage your emotions now to how you might have handled a similar situation during your middle childhood years. What coping strategies did you use then versus now?

36. Recall a time during your childhood when you had to make a moral decision, such as deciding whether to share with a friend or tell the truth about something. How did you approach this decision? How do you think your understanding of right and wrong has evolved since then? Explain how your response relates to Lawrence Kohlberg's levels of moral reasoning.

37. Reflect on your own experiences with friendships during middle childhood. What were the qualities you valued most in your friends at that time? How did these friendships impact your sense of self-worth and social development?

38. Consider the influence of your family during your middle childhood years. How did your family structure, communication patterns, or sibling relationships shape your social and emotional development?

39. Think about an instance where you witnessed or experienced bullying during your elementary school years. How did this experience influence your views on aggression and social relationships? How do you believe it affected your social interactions moving forward?

40. Reflect on the role media played in your life during middle childhood. How did the types of media you consumed influence your interests, behaviors, or social interactions? How do you think your media habits compare to those of children today?

41. Reflect on the classroom climates you experienced during your elementary school years. How did the emotional culture of your classrooms (positive or negative) impact your engagement with learning and your relationships with peers?

42. Think about a teacher you had in elementary school with whom you had a close or conflicted relationship. How did this relationship affect your academic performance and your attitude towards school?

43. Reflect on your participation in extracurricular activities during middle childhood. What skills or values did you gain from these activities, and how have they influenced your development since then?

44. Consider the concept of positive youth development (PYD). How do you think your school or community could have better supported your growth during middle childhood? What programs or initiatives would you have found beneficial?

45. Reflect on a time during your childhood when you experienced or observed a friend dealing with anxiety or other internalizing behaviors. How did this affect their social interactions and academic performance? How do you think the situation could have been handled better by adults or peers?

46. Think about a student you knew in middle childhood who had a neurodevelopmental disorder such as ADHD or autism. How did their condition affect their classroom behavior and relationships with peers? How were they supported by teachers and school staff?

47. Consider the role of resilience in your own development. Can you identify a situation where you faced a significant challenge or adversity during your childhood? What coping strategies did you use, and how did the support systems around you (family, school, community) help or hinder your ability to bounce back?

Essay Questions

48. Write an essay discussing the role of self-efficacy in a child's academic achievement during middle childhood. Explain how a child's belief in their ability to succeed influences their approach to learning tasks and their overall academic performance. Use specific examples to illustrate how high and low self-efficacy can lead to different academic outcomes. Additionally, suggest strategies that teachers and parents can use to help boost a child's self-efficacy in school.

49. Write an essay examining the development of gender identity in middle childhood. Discuss how children's understanding of gender norms evolves during this period and how societal expectations, media, and peer interactions influence their gender identity. Provide examples of how children might challenge or reinforce gender stereotypes and discuss the implications for their overall self-concept.

50. Discuss the role of emotional regulation in middle childhood. How do children develop the ability to manage their emotions, and what factors contribute to their success or struggles in this area? Include examples of coping strategies that children might use during this stage of development.

51. Consider the role of resilience in a child's ability to cope with stress and adversity during middle childhood. What factors contribute to building resilience, and how can caregivers and educators support this process? Include examples of how resilient children might handle challenges differently than their peers.

52. Analyze the factors that contribute to a child's peer status during middle childhood. Discuss how the different categories of peer status (popular, rejected, neglected, controversial, and average) can influence a child's social development and future relationships.

53. Examine the role of family dynamics in shaping a child's social and emotional development during middle childhood. Consider how parenting styles, sibling relationships, and family structure can impact a child's interactions with peers and their overall well-being.

54. Imagine you are the principal of a school that currently offers only a limited number of extracurricular activities. You believe that expanding the range of extracurricular activities will greatly benefit students. Write an essay in which you make the case for adding more extracurricular activities to the school's offerings. In your essay, be sure to address how these activities could improve the overall school climate, strengthen teacher-student relationships, and support positive youth development. Use specific examples to illustrate your points and explain how these changes could lead to better outcomes for the students in your school.

55. Imagine you are a school guidance counselor working with a group of teachers who are concerned about a student displaying both internalizing and externalizing behaviors. The teachers are unsure how to

approach this student to support their mental health and promote resilience. Write a letter to the teachers outlining specific strategies they can use to address these behaviors, and explain how these strategies can help improve the student's socioemotional well-being.

Physical and Cognitive Development in Adolescence (Ages 12 to 18)

9

FIGURE 9.1 Adolescence is a time of significant change in both body and mind. (credit: modification of work "CGvsWebb-2" by Ron B/Flickr, CC BY 2.0)

CHAPTER OUTLINE

9.1 Physical Growth and Development in Adolescence
9.2 Puberty, Sexual Behavior, and Sexual Health in Adolescence
9.3 Cognition in Adolescence
9.4 Decision-Making and Risky Behaviors in Adolescence

WHAT DOES PSYCHOLOGY SAY? Fourteen-year-old Miguel jumps down the stairs with just minutes to go before the morning school bus. He overslept again and didn't lay out his baseball practice uniform the previous night. He grunts an empty apology to his mother whom he now towers over as he packs his backpack. Later that day, his French teacher says he can't use the restroom because of the school policy limiting restroom use to one student at a time; he finds himself arguing with the teacher that the policy doesn't make any sense. At lunch, he and his friends trade jokes and have good laughs. After honors algebra class ends, Miguel is off to a two-hour baseball practice. He comes home exhausted, eager to listen to music, play video games, and relax before doing his homework. Later that night, his mother checks on him, finds him asleep but still in his clothes, and straightens the books and papers on his desk.

Miguel's behaviors and interactions firmly situate him within adolescence—a transition period leading him from childhood toward adulthood in many dimensions. Miguel and those in his life will likely have many questions as he moves through this stage, including the following:

- Is arguing with authority figures a typical part of adolescence?
- Are the changes in sleep needs and habits coming from a lack of motivation, a need for more sleep, or

something else?
- How do adolescents think through risky decisions?
- Is academic achievement just a matter of ability, or do other factors influence educational outcomes for adolescents?

In this chapter you will explore these questions and others about the significant leaps in physical and cognitive development that occur during adolescence.

9.1 Physical Growth and Development in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:
- Identify the milestones of physical development in adolescence
- Describe major aspects of brain development in adolescence
- Explain the general health-care needs of adolescents

It's the sex ed unit in health class, and Latisha is learning some helpful information but also navigating the awkwardness she feels in the classroom. The teacher has explained the technical stuff and tries to make a joke here and there to be relatable, but she gives off a vibe of being uncomfortable, and that makes it harder for Latisha to bring up questions she has. The teacher showed a diagram and used the word “vulva,” but Latisha doesn't feel sure she knows what part of the female body that is and is too embarrassed to ask. Other students in the class have questions and observations running through their minds. “I'm starting to get stinky armpits after gym class and am not sure what to do about that.” “Does everyone notice when my voice cracks?” "I know I'm supposed to get underarm and pubic hair, but I found a dark hair near my nipple. Is this normal?"

It's normal for adolescents to have many questions about the developments their bodies are undergoing. In this section, you will learn more about the physical changes of the teen years and how to support healthy physical growth at this stage of the lifespan.

Physical Development and Activity

The lifespan period of adolescence entails the physical, cognitive, social, and emotional transitions of an individual from childhood to adulthood. The physical changes of adolescence are often dramatic and noticeable. Although growth and development typically occur in spurts, there is an expected order of physical development associated with the adolescent period.

From a purely physical standpoint, adolescence is the period of growth and development that transforms a child’s body into a fully grown adult body. During periods of rapid growth, developing teens may report temporary discomfort in the form of bodily aches and growing pains. Specifically, growing pains mainly affect children between four and fourteen years of age (Lehman & Carl, 2017; Pavone et al., 2011). With these new bodies comes re-learning how to move about fluidly through gross motor skills, as evidenced by the occasional physical awkwardness that often accompanies adolescent growth periods.

Muscle mass and fat tissue increase along with height, but the distribution of muscle and fat is typically different for adolescent males and females. In males, the shoulder to waist ratio increases with broader shoulders and a thinner waist, whereas in females, the hips increase relative to the shoulders and waist. These biological sex differences in muscle and fat distribution often result in slight to moderate size differences as well as differences in muscle strength, cardiovascular endurance, running speed, throwing velocity, and jumping ability over the course of adolescence. These sex-based differences are largely genetically and biologically based, although cultural and social expectations about the activities children participate in likely come into play as well (Beltran-Valls et al., 2019; Courtright, et al., 2013; Hyde, 2005). Children’s height and weight can also vary based on racial and ethnic background. Generally, children from African countries are a bit taller than those of European or North American descent, who in turn are a bit taller than those of Asian descent (Roser et al., 2021).

Though we see some physical differences based on things like ethnoracial heritage and sex assigned at birth, it is important to also note that there is wide individual variability. This individual variability in physical growth is based on a host of factors like inherited genes, nutrition and access to other environmental resources, like clean air and water. For example, several studies have found that people who live in less polluted areas are likely to be taller and have better skeletal maturation (Schell & Rousham, 2022).

In psychology, we are often interested in understanding both the group-level differences and the individual diversity and variability. For example, in competitive ice swimming, we often see that professional male swimmers often swim faster that professional female swimmers due to higher muscle mass and taller stature. However, females are more likely to close that distance when swimming longer distance, perhaps due in part to better protective insulation and buoyancy from having a higher body fat percentage (Oppermann et al., 2022). This demonstrates that multiple factors can impact and influence physical differences and how they in turn impact performance or skill differences.

Adolescence is also a crucial time during which individuals develop lifestyles and behavioral patterns that will endure across their lifetime. For this reason, routines promoting health, such as regular exercise, should be instilled as early lifestyle habits (Kumar et al., 2015). Several motivational factors influence teens' interest and participation in physical activity and exercise, which in turn leads to differences in physical growth and overall strength. While research shows that adolescents give competition, social recognition, challenge, affiliation, fun or well-being as the main reasons for doing physical activity, other factors like parental guidance, body image, social anxiety, and lack of time may pose barriers (Peykari et al., 2015; Portela-Pino et al., 2019).

Social factors can also influence differences in physical activity and health behaviors. Gender differences are noted in adolescent participation in sport, exercise, and physical activity. For instance, Slater and Tiggemann (2010) noted that girls aged thirteen to fifteen years stopped participating in sports and exercise due to worries about their appearance. A follow-up study showed that teasing and body image issues further contributed to reduced participation in sports and other physical activities among girls aged twelve to sixteen years (Slater & Tiggemann, 2011). Overall, physical activity during adolescence is influenced by many factors including access to exercise and sports programs, and individuals' motor competence and interests.

Brain Development

The same hormones that trigger physical development also lead to dramatic brain growth and development during adolescence. Over the past few decades, there has been a surge of research into the developing adolescent brain. We now know that the teenage brain, although undergoing rapid development, is immature until the midtwenties (e.g., Anderson, 2022; Blakemore, 2008; Guyer et al., 2016). Adolescence marks the point where the brain achieves its full adult size and weight of roughly 3 pounds, yet brain development continues in several areas in early adulthood. This means that although we should expect growth across the period of adolescence, brain maturation continues beyond the adolescent period.

Several brain structures undergo particularly important developments during adolescence. The frontal lobe and the prefrontal cortex are the center of executive functioning—where rationality, decision-making, planning, and organization take place. A fully mature frontal lobe helps to regulate many of the brain's structures and functions, especially through the process of inhibition of behaviors that may not be appropriate socially or for other reasons. Additionally, a collection of sub-cortical brain structures, known as the limbic system, is also developing over the course of adolescence. The **limbic system** includes the **amygdala**, responsible for emotional processing; **hippocampus**, which governs memory formation; **thalamus**, which controls sensory input and response; and **hypothalamus**, which is the control center for hormone production. Each of these brain structures connect and coordinate with other areas of the brain, especially the frontal lobe and prefrontal cortex (Figure 9.2).

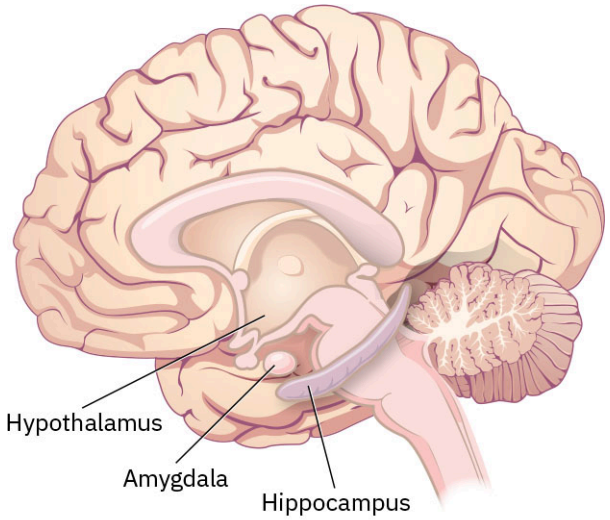


FIGURE 9.2 The limbic system regulates emotion and other behaviors. It includes parts of the cerebral cortex located near the center of the brain, including the hippocampus as well as the thalamus, hypothalamus, and amygdala. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

As stated earlier, the frontal lobe is intricately connected to the limbic system. This connection is crucial for regulating emotional responses and making decisions based on both logic and feelings. Research has shown that during adolescence, the development of the frontal lobe and its connections to the limbic system are still maturing; this can be associated with difficulties in managing emotions and impulsivity (Casey et al., 2008). This means adolescents are likely to sometimes have difficulties with things like inhibition, emotional regulation, and attention. For example, you might remember a time when you got really excited (limbic system activation) and found yourself blurting out something that you wish you hadn't said before you could stop yourself (frontal lobe contribution).

Research confirms that developmental immaturities in the areas of response inhibition, cognitive control, attentional regulation, and other related complex cognitive skills result from gradual maturing of the prefrontal cortex and other frontal regions (Spear, 2013). Common behavioral experiences in adolescence—like testing risky behaviors, being distracted or having difficulty staying engaged, or failing to consider consequences of choices—result from the stage of brain development at this age. However, the frontal lobe develops swiftly during adolescence, allowing for increasingly complex cognitive tasks. It is the last structure to mature in humans, at around age twenty-five years.

Adolescents steadily increase their ability to recognize, process, and think in more sophisticated ways about emotional experiences, but the relative lack of coordination and integration between the limbic system and the prefrontal cortex means that emotions can frequently override careful planning and decision-making. For example, a fifteen-year-old might feel insulted by a friend's poorly worded comment, though the insult might be very slight and have a history of complicated friendship experiences behind it. But because the frontal lobe isn't yet efficiently connected to the amygdala, the offended teen lacks the fully developed ability to think through and weigh the consequences of her next move. We shouldn't be surprised when she yells at her friend. This lack of impulse control is a marker of psychosocial immaturity during adolescence (Casey & Caudle, 2013; Icenogle & Cauffman, 2021; Steinberg & Scott, 2003).

To summarize, the connections between the decision-making center (prefrontal cortex) and the emotional areas (a.k.a. limbic system) of teens' brains are still growing but not always at the same pace. Because of this, teenagers who are experiencing a lot of emotional arousal might find it difficult to articulate their thoughts or explain their actions as they are doing something.

With age and life experiences of adolescence, the brain's synaptic connections increase, resulting in significant

improvements in thinking and processing skills (American College of Pediatricians, 2022). At the same time, neural circuits or pathways that are not used are eliminated through synaptic pruning. You might guess that the loss of synapses, the connections between neurons, would result in loss of function or ability, but the opposite is true—synaptic pruning ensures that brain pathways that are more frequently used, and consequently are more important, are reinforced and strengthened.

LINK TO LEARNING

Cognitive neuroscientist Sarah-Jayne Blakemore examines the differences between the prefrontal cortex of adolescents and that of adults (https://openstax.org/r/104Prefrontal) to illustrate how "teenage" behaviors typically stem from the growing and developing brain.

Nutrition, Sleep, and Health Care

Adolescents' bodies and brains undergo a tremendous amount of change that is taxing both physically and emotionally. What can adolescents and their caregivers do to help make this transition as healthy as possible? The answer may sound familiar: remind adolescents about the building blocks of a healthy life and model good health behaviors for them. In other words, proper nutrition, adequate sleep, and regular visits with a health-care provider.

Proper nutrition is essential for the rapid growth and development of adolescence. Dietary choices and habits established during adolescence greatly influence future health, and many studies report that teens consume few fruits and vegetables and insufficient calcium, iron, vitamins, and minerals for healthy development (Christian & Smith, 2018). Current recommendations for females and males at various points in adolescence and adulthood are shown in Figure 9.3. Females in mid-adolescence need an average of 1,800 calories per day, while males require an average of 2,200. Calcium, iron, and zinc are recommended essential nutrients, along with steady intake of other vitamins and nutrients (Das et al., 2017). For example, nine- to thirteen-year-old males and females require 8 mg of iron per day, but this increases to 11 mg for males and 15 mg for females from ages fourteen to eighteen years (NIH, 2013). This difference is due to differences in the role of puberty in the body.

Dietary Reference Intakes (DRIs) Recommendations						
Macronutrients, Minerals & Vitamins	Females			Males		
	9–13	14–18	19–30	9–13	14–18	19–30
Calories	1,600	1,800	2,000	1,800	2,200	2,400
Protein (g)	34	46	46	34	52	56
Fiber (g)	22	25	28	25	31	34
Calcium (mg)	1,300	1,300	1,000	1,300	1,300	1,000
Iron (mg)	8	15	18	8	11	8
Zinc (mg)	8	9	8	8	11	11
Vitamin A (mcg)	600	700	700	600	900	900
Vitamin C (mg)	45	65	75	45	75	90
Vitamin B-12 (mcg)	1.8	2.4	2.4	1.8	2.4	2.4

Source: USDA. (2020). Dietary Guidelines for Americans, 2020–2025.

FIGURE 9.3 Though the numbers are often quite similar the nutritional needs of adolescents vary between sexes and at different age range. Notice the increased calorie need over the adolescent development stage and the lowered suggested calcium once adolescents reach age nineteen years. (data source: USDA; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Adolescents' nutritional status, which is the extent to which they meet their bodies' nutritional needs, is influenced by their social, economic, and political contexts. For example, economic factors and local food systems affect families' access to both nutritious and unhealthy foods. Cultural factors influence the foods on a teen's plate and the prevalence (or absence) of home-cooked meals (Keats et al., 2018). Globally, total energy, protein, and fat intakes are higher among younger adolescent females than older females. Protein and fat intake is also higher in urban areas. Fruit and vegetable intake is relatively low, with just over one-third of females reporting eating vegetables daily and fewer than half reporting daily fruit consumption (Keats et al., 2018).

Sleep is an essential part of a healthy life and serves a restorative function for adolescents' developing bodies and brains. The human growth hormone is secreted primarily during the deepest portions of sleep, making sleep particularly critical during the growth periods of childhood and adolescence. However, the prevalence of social media and excessive screen use at night have increased markedly in recent decades, and these habits can disrupt sleep onset and quality for teens (Cain et al., 2010). Significant health and educational concerns have been associated with even mild sleep deprivation, including greater risk for accidents and injuries, hindered learning, memory loss, aggression, metabolism changes, and poor self-esteem (Sharman & Illingworth, 2020).

Our sleep needs change across the lifespan. Based on sleep research, the Centers for Disease Control (CDC) provides guidelines for sleep requirements during adolescence: children ages six through twelve years need nine to twelve hours of sleep per night, whereas teens ages thirteen through eighteen years need eight to ten hours per night. Given these guidelines, data from the United States show that only 40 percent of middle school students and just 30 percent of high school students get the recommended amount of sleep. In other

words, teens in the United States are sleep deprived. Only about 20 percent of U.S. teenagers sleep the recommended 9.25 hours a night (Hirshkowitz et al., 2015; National Sleep Foundation [NSF] 2006). This lack of sleep contributes to a variety of poor academic, physical, and mental health outcomes (Owens, 2014; Sharman & Illingworth, 2020; Winsler et al., 2015), despite the fact that adolescents tend to average two more hours of sleep on weekends than on school days (Galina et al., 2021; National Academy of Sciences, 2000; Wheaton et al., 2018).

LINK TO LEARNING

Getting enough sleep is important for people of all ages to stay in good health. Learn how much sleep you need (https://openstax.org/r/104CDCSleepRec) each day, check the CDC recommendations.

A recent study of United States high school students found the odds of a sleep-deprived student feeling sad and hopeless increased by 38 percent for each recommended hour of sleep a student missed. Additionally, the odds of reporting serious suicidal ideation increased by 42 percent and the odds of having attempted suicide increased by 58 percent. (Winsler et al., 2015). The relationship between sleep duration and suicidal ideation was stronger for male teens, while sleep duration was more strongly associated with hopelessness for Native American and White students than for other minoritized students. While this study reveals a strong link between sleep deprivation and mental health issues in adolescents, we can't say for sure that one causes the other. It's also possible that pre-existing mental health problems or substance use can lead to poor sleep.

Psychologists have also uncovered another major change in adolescents' sleep–wake cycle. The **circadian rhythm** is the body's biologically based pattern of physiological events that follow a daily rhythm, including alertness levels, hunger, blood pressure, and sleepiness. Mary Carskadon and colleagues discovered that adolescents experience a phase shift in their sleep–wake cycle leading them to naturally wake up later and go to bed later if allowed (Taylor et al., 2005). This tendency is thought to result from an internal biological process related to pubertal changes in the secretion of melatonin (a hormone that aids sleep), as well as changes in adolescents' sensitivity to ambient light. Further studies of adolescent sleep patterns support this finding. The American Academy of Pediatrics (2014) published a policy statement strongly recommending middle and high schools adjust start times to encourage and allow students to get adequate sleep, in turn improving physical and mental health, academic performance, safety, and quality of life. A literature review noted starting school later for adolescents led to general improvements in attendance and lower rates of tardiness, falling asleep in class, depression symptoms, and motor vehicle crashes (Wheaton et al., 2017).

LINK TO LEARNING

The lack of proper or disrupted sleep can lead to significant health issues, yet identifying sleep problems isn't always straightforward. That is why keeping a sleep diary (https://openstax.org/r/104CDCSleepDiary) is a useful tool. Keeping a sleep diary helps track sleep patterns, monitor habits, and document any issues with sleep.

Adolescents continue to need routine preventive health-care, including care that is sensitive and responsive to new health issues brought about by the developmental changes of adolescence. Older children (ages twelve to seventeen years) in the United States were less likely to receive sufficient preventive care, one or more visits in a year, compared to younger children (birth to eleven years) (Conmy et al., 2023). Preventive care includes any prevention or routine appointment with a doctor, dentist, nurse, or other health-care professional and includes screening for physical and mental health needs. For example, seeing a dentist for a cleaning every six months is a form of preventive dental care. Similarly, having your vision screened at an annual doctor's appointment is preventive vision care. In terms of mental health preventive care, children and adolescents should be screened for abuse or unstable home environment, stress or anxiety, and depression. By adolescence, these screenings should also include suicide risk screenings. Notably, adolescents face a higher risk of depression and suicide

risk compared to younger children, raising concerns about potential missed behavioral health issues. Overall, children of all ages received less preventive care in 2020 and 2021 compared to previous years (Conmy et al., 2023).

The American Academy of Pediatrics recommends checking the following during a teen's annual medical checkup, which should include a physical exam: height and weight, body mass index (BMI), blood pressure, and condition of the skin and spine. Some providers may test for anemia, depression, cholesterol, hearing, vision, HIV, oral health, sexually transmitted infections (STIs), tuberculosis, and use of tobacco, alcohol, or drugs (Hagan et al., 2017). The routine immunization chart recommends following a continued vaccination schedule including vaccines that protect against meningitis and bloodstream infections, tetanus and human papillomavirus (HPV) (American Academy of Pediatrics, 2023).

Although adolescents are legally minors, professional organizations and state legislatures alike have recognized that teens need to be able to discuss their health concerns, make certain health-care decisions, and access certain health-related services with medical professionals in a confidential manner (Harris, 2017; Schapiro & Mihaly, 2021). Psychological research has shown that adolescents are nearly as capable as young adults of making informed, complex decisions (Icenogle & Cauffman, 2021; Steinberg, 2014). This marks a transition from childhood indicating that many adolescents may benefit from increased privacy, confidentiality, and more independence and consent rights when deciding whether or not, and how, to receive medical care (Berlin & Bravender, 2009; Sharko et al., 2018).

INTERSECTIONS AND CONTEXTS

Supporting Pubertal Development for LGBTQ+ Adolescents

Most of what we know about the health of LGBTQ+ youth comes from limited research and focuses on mental health. For example, factors like being a sexual minority, facing bullying, and experiencing family rejection can increase suicidal thoughts and attempts among LGBTQ+ youth (Ryan et al., 2009).

There is limited research attending to the physical health of LGBTQ+ youth, partly because, like non-LGBTQ+ youth, they usually do not struggle with chronic physical diseases. For some transgender youth, puberty can mean increasing mental health risks, such as anxiety as their changing body may be incongruent with how they see themselves and identify. However, when teens have support from family members and medical health care that provides them with as much consent and individual rights as possible, they experience much lower risks of depression and anxiety (Brierley et al., 2024).

Teens with persistent gender dysphoria—persistent psychological distress resulting from incongruence between their sex assigned at birth and their gender identity—during early stages of puberty who have parental support are often considered eligible for a variety of medical supports and potential interventions such as the administration of puberty-delaying hormones (Garofalo, 2011; Hembree et al., 2017). The use of puberty-delaying hormones, under the close supervision of a medical doctor with appropriate expertise, may allow some youth extra time for the youth's gender identity development while alleviating the dysphoria associated with the incongruent development of secondary sex characteristics during puberty (Hembree et al., 2017). This medical care, known as puberty suppression, is reversible and involves complex individual patient-doctor care choices (Jorgensen et al., 2024).

Transgender and gender-diverse individuals often face stigma and discrimination, resulting in mental and physical health disparities. Delays in initiating interventions can lead to disadvantages for this marginalized group, as puberty progresses before the treatment begins. Additional barriers, such as cost, insurance coverage, lack of education, and delays in treatment initiation persist, with the average age of initiation falling well beyond the start of puberty in the United States (Hembree et al., 2017). There are many individual differences in the best choices for any form of medical care or intervention and some youth may experience certain risks from puberty

suppression, such as fatigue or headache or bone mass changes (Betsi et al., 2024). However, research on transgender youth and their families also finds that those who receive safe and medically supported puberty suppression and well-rounded medical care show improvements in quality of life, well-being, and psychological health (Betsi et al., 2024; Horton, 2024). While there is still much to learn in the field of best clinical and medical care for children and adolescents with gender dysphoria, pediatric groups like the European Academy of Paediatrics have concluded that all treatments should be evaluated to support "the child's right to an open future" (i.e., that youth should be provided as many rights in making choices that impact their future autonomous adult lives as possible (Brierley et al., 2024; Jorgensen et al., 2024).

Health Risks during Adolescence

While most adolescents are healthy, unique health challenges that may impact their overall well-being still exist. Some of these challenges include sleep disruptions, eating disorders, substance use, mental health issues, and self-harm. The leading causes of death in adolescence are accidents, homicide, and suicide (CDC, 2022). Many of these health and mortality risks can be prevented through prevention and intervention efforts that focus on promoting protective factors (e.g., mental health and socioemotional support) and reducing risk factors (e.g., sleep issues and victimization).

Sleep Disorders, Mental Health, and Suicide Risk

As discussed earlier in this section, getting adequate sleep is important for adolescents' growing brains and bodies. Although insufficient sleep accounts for most sleep issues, adolescents may also be at risk for particular sleep disorders. The most common sleep disorders in this age group include delayed sleep-wake phase disorder, insomnia, and obstructive sleep apnea (Moore & Meltzer, 2014). It's critical to recognize that sleep disruption can significantly impact adolescents' physical and mental health.

With all of the rapid changes that occur during adolescence, it is no surprise that mental health may become a challenge. The *Youth Risk Behavior Survey Data Summary and Trends Report* showed that from 2011 to 2021, the rate of adolescents reporting poor mental health increased dramatically (Centers for Disease Control and Prevention [CDC], 2024). The National Institute of Mental Health (NIMH) estimates that around 50 percent of adolescents have a mental health disorder, with that number increasing across adolescence from around 45 percent in ages thirteen to fourteen years to 56.7 percent in ages seventeen to eighteen years (NIMH, 2023). Depression and anxiety are among the most common mental health disorders (NIMH, 2017). In adolescence, approximately 31.9 percent of individuals have an anxiety disorder and 40.6 percent have experienced at least one major depressive episode (NIMH, 2017).

One reason that anxiety and depression risk is higher in adolescence than in childhood is the increased disruptions in emotion regulation typical to that stage of the lifespan (Young et al., 2020). As you may recall, adolescents' brains are still developing, particularly in those regions responsible for emotion regulation. Adolescents with a greater number of adverse childhood experiences (ACEs) are also at a greater risk of anxiety and depression (Lee et al., 2020). These statistics highlight the need for increased mental health awareness, early intervention, and accessible support services.

Unfortunately, without adequate support, adolescents facing mental health challenges may turn to unhealthy coping mechanisms such as substance use or self-harm. A meta-analysis on adolescent substance use found that mental health and substance use often occurred together (Halladay et al., 2020). Self-harm behaviors include any deliberate physical harm to the self and may be nonsuicidal or suicidal behavior. In particular, adolescents who have experienced childhood abuse and/or neglect are at the highest risk for self-harm behaviors, followed by those with psychological issues including personality disorders, depression, and anxiety (McEvoy et al., 2023). When left untreated or undetected, struggles with mental health and self-harm behaviors in adolescence can lead to an increased risk of suicide.

Suicide is the second leading cause of death among youth aged ten to twenty-four years in the United States (CDC, 2023). A report of high school students disclosed that in 2023, more than one in five contemplated suicide, and one in ten attempted suicide (CDC, 2024). While these statistics are staggering, the data showed that females and LGBTQ+ are at a higher risk of suicidal thoughts and behaviors, and attempted suicide. Some of these disparities in risk may be due to health-care disparities, higher risk factors, fewer protective factors, and increased victimization risks experienced by these groups (Gaylor et al., 2023). Research recommends that suicide prevention in adolescence focus on creating equitable health-care access, reducing risk factors, and promoting socioemotional and mental health support (Gaylor et al., 2023). Suicide prevention in adolescence is an urgent priority, and while some strides have been made in inventions, continued research is necessary (Wasserman et al., 2021).

Maladaptive Eating and Eating Disorders

When all goes right, adolescents get the nutrition they need through healthy eating habits. However, this stage of development also marks a vulnerable period for the emergence of maladaptive eating behaviors and eating disorders. Between 2018 and 2022, the number of times young people under age seventeen years in the United States sought medical help for eating disorders more than doubled (Pastore et al., 2023). While eating disorders can affect anyone, they are more prevalent in women than in men, and individuals in Western countries are at a higher risk than those in Asian countries (Qian et al., 2022). Asian American and non-Hispanic White youth are also at a higher risk of eating disorders, though it is likely that eating disorders are underdiagnosed and less likely to be detected in Black, Hispanic, and other minoritized youth, and these youth may be at an increased risk of specific eating disorders (Barakat et al., 2023; Gorrell et al., 2021). The consequences of these disorders extend far beyond unhealthy eating habits, with individuals facing an increased risk of depression, substance use, and long-term physical health problems. In many cases, eating disorders begin with maladaptive eating behaviors.

Maladaptive eating behaviors can include eating too much or too little in terms of nutritional needs and can occur in bodies of any size (Brytek-Matera, 2021). Risk factors for maladaptive eating behaviors include difficulties with emotion regulation, unhealthy attitudes toward food, stress and mental health struggles, perfectionism, and cultural pressures such as pressures to diet or adhere to a certain body image (Barakat et al., 2023; Brytek-Matera, 2021; Hampton-Anderson & Craighead, 2021). In males and females, internalizing societal and media messages about ideal physical appearance is also associated with increased risks of maladaptive eating behaviors and disordered eating (Vankerckhoven et al., 2024). For example, if an adolescent believes that their body must meet a thin ideal or muscular ideal as portrayed by the media, they are more likely to struggle with maladaptive eating.

The American Psychiatric Association (2022) defines eating disorders as involving long-term struggles with eating that alters food consumption and impairs physical and/or psychological health. The most prevalent eating disorders include anorexia nervosa, bulimia nervosa, and binge eating disorder (Crone et al., 2023). Anorexia nervosa typically involves food restriction. Bulimia nervosa includes episodes of binge eating followed by purging through vomiting or excessive exercise. Regular episodes of uncontrollable overeating indicate binge eating disorder. Other eating disorders that may be diagnosed include avoid/restrictive food intake disorder or an unspecified eating disorder (American Psychiatric Association, 2022). It's important to note that not all individuals with eating disorders are underweight, and individuals who are in a normal weight to overweight range may still struggle with an eating disorder.

While each of these eating disorder diagnoses is distinctive, many of the symptoms can overlap (Table 9.1). Behaviors associated with an eating disorder left untreated may lead to malnourishment and health consequences across a wide range of body systems, including the skin, hair, nails, blood, major organs, and brain functioning (NIMH, 2017).

Symptoms	Health Consequences
Restricted eating	Anemia and blood pressure problems
Intense fear of weight gain	Muscle loss and weakness
Distorted body image	Brittle hair and nails
Excessive thoughts related to body size	Problems with the skin including dry skin
Underweight	Fatigue
Unusual eating patterns such as over or undereating, binge eating, or fasting	Gastrointestinal problems including damage to organs, ulcers, constipation, reflux, and diarrhea
Forced vomiting, use of laxatives or diuretics, or other purging behaviors	Throat, neck, and jaw problems (especially in cases of forced vomiting)
Excessive exercise	Dehydration and electrolyte imbalance
Lack of appetite	Organ failure and damage to heart functioning
Sudden or dramatic weight change	Brain damage

TABLE 9.1 Common Symptoms and Health Consequences of Eating Disorders (sources: American Psychiatric Association, 2022; NIMH, 2024)

Eating disorders are complex mental health issues that can be harmful to both physical and emotional well-being (Smink et al., 2014). Having a supportive family environment, high self-esteem, and self-efficacy, as well as a positive body image can all be protective factors for teens at risk of maladaptive eating and eating disorders. Prevention and intervention efforts that focus on promoting resilience, healthy identity development, and positive body image can help reduce the risk of eating disorders (Vankerckhoven et al., 2024). For those adolescents who struggle with eating disorders, cognitive behavioral therapy has been shown to be an effective treatment for a range of eating disorder types (Hay, 2020; Q da Luz et al., 2020).

LINK TO LEARNING

Worldwide, around 10 percent of people will have an eating disorder at some point in their lifetime. However, eating disorders are often misunderstood which can make identifying symptoms and finding treatment a challenge. Learn more about the truths versus the misconceptions about eating disorders (https://openstax.org/r/104EatDisorder) in this video.

References

Adair, LS. (2001). Size at birth predicts age at menarche. Pediatrics, 107(4), E59. https://doi.org/10.1542/peds.107.4.e59

Agarwal, K.N. (2015). *The Growth: Infancy to Adolescence* (3rd ed.). New Delhi: CBS Publishers

Aksglaede, L., Sorensen, K., Petersen J. H., Skakkebaek, N. E., & Juul A. (2009): Recent decline in age at breast development: The Copenhagen Puberty Study. Pediatrics, 123(5), e932–939. https://doi.org/10.1542/peds.2008-2491

Allard, M. (2008). How high school students use time: A visual essay. Monthly Labor Review. U.S. Bureau of Labor Statistics. https://www.bls.gov/opub/mlr/2008/11/art4full.pdf

American Academy of Pediatrics. (2023). Child and adolescent immunization schedule by age. Recommendations for ages 18 years or younger, United States, 2024.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Anderson, J. E. (2022). The teenage brain: Under construction. American College of Pediatricians. https://acpeds.org/assets/positionpapers/The-Teenage-Brain-Revised-April-2022-for-PDF.pdf

Anderson, P. M., Butcher, K. F., & Schanzenbach, D. W. (2019). Understanding recent trends in childhood obesity in the United States. Economics & Human Biology, 34, 16–25. https://doi.org/10.1016/j.ehb.2019.02.002

Barakat, S., McLean, S. A., Bryant, E., Le, A., Marks, P., Touyz, S., & Maguire, S. (2023). Risk factors for eating disorders: Findings from a rapid review. *Journal of Eating Disorders*, *11*(1), 8.

Barnett, T. A., O'Loughlin, J., & Paradis, G. (2002). One-and two-year predictors of decline in physical activity among inner-city schoolchildren. https://doi.org/10.1186/s40337-022-00717-4

Beltran-Valls, M. R., Janssen, X., Farooq, A., Adamson, A. J., Pearce, M. S., Reilly, J. K., Basterfield, L., & Reilly, J. J. (2019). Longitudinal changes in vigorous intensity

physical activity from childhood to adolescence: Gateshead Millennium Study. *Journal of Science and Medicine in Sport, 22*(4), 450–455. https://doi.org/10.1016/j.jsams.2018.10.010
Betsi, G., Goulia, P., Sandhu, S., & Xekouki, P. (2024). Puberty suppression in adolescents with gender dysphoria: An emerging issue with multiple implications. *Frontiers in Endocrinology, 15*, 1309904. https://doi.org/10.3389/fendo.2024.1309904
Blakemore, S. J. (2008). The social brain in adolescence. Nature Reviews Neuroscience 9, 267–277. https://doi.org/10.1038/nrn2353
Bleil, M. E., Booth-LaForce, C., & Benner, A. D. (2017). Race disparities in pubertal timing: Implications for cardiovascular disease risk among African American women. *Population Research and Policy Review, 36*(5), 717–738. https://doi.org/10.1007/s11113-017-9441-5
Blum, W. F. (1997). Leptin: The voice of the adipose tissue. [Supplemental material] Hormone Research 48(4), 2–8. https://doi.org/10.1159/000191303
Brand, S., Kalak, N., Gerber, M., Clough, P. J., Lemola, S., Sadeghi Bahmani, D., Pühse, U., & Holsboer-Trachsler, E. (2017). During early to mid adolescence, moderate to vigorous physical activity is associated with restoring sleep, psychological functioning, mental toughness and male gender. *Journal of sports sciences, 35*(5), 426–434. https://doi.org/10.1080/02640414.2016.1167936
Brierley, J., Larcher, V., Hadjipanayis, A. A., & Grossman, Z. (2024). European Academy of Paediatrics statement on the clinical management of children and adolescents with gender dysphoria. *Frontiers in Pediatrics, 12*, 1298884. https://doi.org/10.3389/fped.2024.1298884
Brytek-Matera, A. (2021). Negative affect and maladaptive eating behavior as a regulation strategy in normal-weight individuals: A narrative review. *Sustainability, 13*(24), 13704. https://doi.org/10.3390/su132413704
Bygdell, M., Kindblom, J. M., Jansson, J. O., & Ohlsson, C. (2021). Revisiting the critical weight hypothesis for regulation of pubertal timing in boys. *The American Journal of Clinical Nutrition, 113*(1), 123–128. https://doi.org/10.1093/ajcn/nqaa304
Cain, N. & Gradisar, M. (2010). Electronic media use and sleep in school-aged children and adolescents: A review. *Sleep Medicine, 11*(8), 735–742. https://doi.org/10.1016/j.sleep.2010.02.006
Casey, B. J., & Caudle, K. (2013). The teenage brain: Self control. *Current Directions in Psychological Science, 22*(2), 82–87. https://doi.org/10.1177/0963721413480170
Casey, B. J., Getz, S., & Galvan, A. (2008). The adolescent brain. *Developmental Review, 28*(1), 62–77. https://doi.org/10.1016/j.dr.2007.08.003
Castellanos-Ryan, N., Parent, S., Vitaro, F., Tremblay, R. E., & Séguin, J. R. (2013). Pubertal development, personality, and substance use: A 10-year longitudinal study from childhood to adolescence. *Journal of Abnormal Psychology, 122*(3), 782. https://doi.org/10.1037/a0033133
Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 2018–2022 on CDC WONDER Online Database, released in 2024. Data are from the Multiple Cause of Death Files, 2018–2022, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at http://wonder.cdc.gov/ucd-icd10-expanded.html
Centers for Disease Control and Prevention. (2024). *Youth Risk Behavior Survey Data Summary & Trends Report: 2013–2023*. U.S. Department of Health and Human Services. https://www.cdc.gov/yrbs/dstr/index.html
Choudhury, S., Charman, T., & Blakemore, S. J. (2008). Development of the teenage brain. *Mind, Brain, and Education, 2*(3), 142–147. https://doi.org/10.1111/j.1751-228X.2008.00045.x
Christian, P., & Smith, E. R. (2018). Adolescent undernutrition: Global burden, physiology, and nutritional risks. *Annals of Nutrition and Metabolism, 72*(4), 316–328. https://doi.org/10.1159/000488865
Conmy, A. B., Peters, C., De Lew, N., & Sommers, B. D. (2023). *Children's health coverage trends: Gains in 2020–2022 reverse previous coverage losses* (HP-2023-07). U.S. Department of Health and Human Services. https://aspe.hhs.gov/sites/default/files/documents/77d7cc41648a371e0b5128f0dec2470e/aspe-childrens-health-coverage.pdf
Courtright, S. H., McCormick, B. W., Postlethwaite, B. E., Reeves, C. J., & Mount, M. K. (2013). A meta-analysis of sex differences in physical ability: Revised estimates and strategies for reducing differences in selection contexts. *Journal of Applied Psychology, 98*(4), 623–641. https://doi.org/10.1037/a0033144
Craggs, C., Corder, K., van Sluijs, E. M., & Griffin, S. J. (2011). Determinants of change in physical activity in children and adolescents: A systematic review. *American Journal of Preventive Medicine, 40*(6), 645–658. https://doi.org/10.1016/j.amepre.2011.02.025
Crone, C., Fochtmann, L. J., Attia, E., Boland, R., Escobar, J., Fornari, V., Golden, N., Guarda, A., Jackson-Triche, M., Manzo, L., Mascolo, M., Pierce, K., Riddle, M., Seritan, A., Uniacke, B., Zucker, N., Yager, J., Craig, T. J., Hong, S-H., & Medicus, J. (2023). The American Psychiatric Association practice guideline for the treatment of patients with eating disorders. *American Journal of Psychiatry, 180*(2), 167–171. https://doi.org/10.1176/appi.ajp.23180001
Darling, A. M., Sunguya, B., Ismail, A., Manu, A., Canavan, C., Assefa, N., Sie, A., Fawzi, W., Sudfeld, C., Guwattude, D., & Guwattude, D. (2020). Gender differences in nutritional status, diet and physical activity among adolescents in eight countries in sub-Saharan Africa. *Tropical Medicine & International Health, 25*(1), 33–43. https://doi.org/10.1111/tmi.13330
Das, J. K., Salam, R. A., Thornburg, K. L., Prentice, A. M., Campisi, S., Lassi, Z. S., Koletzko, B., & Bhutta, Z. A. (2017). Nutrition in adolescents: Physiology, metabolism, and nutritional needs. *Annals of the New York Academy of Sciences, 1393*(1), 21–33. https://doi.org/10.1111/nyas.13330
Dobbs, D. (2012). Beautiful brains. *National Geographic, 220*(4), 36.
Dudovitz, R.N., Chung, P.J., Elliott, M.N., Davies, S.L., Tortolero, S, Baumler, E., Banspach, S. W., Schuster, M. A. (2015). Relationship of age for grade and pubertal stage to early initiation of substance use, *Preventing Chronic Disease, 12*, 150234. http://dx.doi.org/10.5888/pcd12.150234
Eckert-Lind, C., Busch, A. S., Petersen, J. H., Biro, F. M., Butler, G., Bräuner, E. V., & Juul, A. (2020). Worldwide secular trends in age at pubertal onset assessed by breast development among girls: A systematic review and meta-analysis. *JAMA Pediatrics, 174*(4), e195881-e195881. https://doi.org/10.1001/jamapediatrics.2019.5881
Escribano, L. G., Fernández-Marcote, A. E., Casas, A. G., López, P. J. T., & Marcos, M. L. T. (2017). Revisión y análisis de la influencia del entorno afectivo y los motivos de práctica de actividad física actual en adolescentes. *Journal of Negative and No Positive Results: JONNPR, 2*(1), 23–28. https://doi.org/10.19230/jonnpr.1210
Evans, M. C., Campbell, R. E., & Anderson, G. M. (2022). Physiological regulation of leptin as an integrative signal of reproductive readiness. *Current Opinion in Pharmacology, 67*, 102321. https://doi.org/10.1016/j.coph.2022.102321
Galina, S. D., Souza, J. C., Valdez, P., & Azevedo, C. V. (2021). Daily light exposure, sleep–wake cycle and attention in adolescents from different urban contexts. *Sleep Medicine, 81*, 410–417. https://doi.org/10.1016/j.sleep.2021.03.012
Garofalo, R. (2011). *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. The National Academies Press.
Gaydosh, L., Belsky, D. W., Domingue, B. W., Boardman, J. D., & Harris, K. M. (2018). Father absence and accelerated reproductive development in non-Hispanic white women in the United States. *Demography, 55*(4), 1245–1267. https://doi.org/10.1007/s13524-018-0696-1
Glass, D. J., Geerkens, J. T., & Martin, M. A. (2022). Psychosocial and energetic factors on human female pubertal timing: A systematized review. *Evolutionary Human Sciences, 4*, e28. https://doi.org/10.1017/ehs.2022.24
Gorrell, S., Le Grange, D., Blalock, D. V., Mehler, P. S., Johnson, C., Manwaring, J., Duffy, A., Huston, E., McClanahan, S., & Rienecke, R. D. (2021). Gender identity, race/ethnicity and eating pathology in a treatment-seeking community sample. *Journal of Behavioral and Cognitive Therapy, 31*(1), 77–89. https://doi.org/10.1016/j.jbct.2020.11.006
Guyer, A. E., Silk, J. S., & Nelson, E. E. (2016). The neurobiology of the emotional adolescent: From the inside out. *Neuroscience & Biobehavioral Review, 70*, 74–85. https://doi.org/10.1016/j.neubiorev.2016.07.037
Hagan, J. F., Shaw, J. S., Duncan, P. M., (Eds.). (2017). *Bright futures: Guidelines for health supervision of infants, children, and adolescents* (4th ed.). American Academy of Pediatrics.
Halladay, J., Woock, R., El-Khechen, H., Munn, C., MacKillop, J., Amlung, M., Ogrodnik, M., Favotto, L., Aryal, K., Noori, A., Kiflen, M., & Georgiades, K. (2020). Patterns of substance use among adolescents: A systematic review. *Drug and Alcohol Dependence, 216*, 108222. https://doi.org/10.1016/j.drugalcdep.2020.108222
Hamlat, E. J., Stange, J. P., Abramson, L. Y., & Alloy, L. B. (2014). Early pubertal timing as a vulnerability to depression symptoms: Differential effects of race and sex. *Journal of Abnormal Child Psychology, 42*(4), 527–538. https://doi.org/10.1007/s10802-013-9798-9
Hampton-Anderson, J. N., & Craighead, L. W. (2021). Psychosociocultural contributors to maladaptive eating behaviors in African American youth: Recommendations and future directions. *American Journal of Lifestyle Medicine, 15*(6), 621–633. https://doi.org/10.1177/1559827620936951
Harris, L. J. (2017). Teen health care decisions: How maturity and social policy affect four hard cases. In Studies in Law, Politics, and Society (pp. 185–217). Emerald Publishing Limited.
Hay, P. (2020). Current approach to eating disorders: A clinical update. *Internal Medicine Journal, 50*(1), 24–29. https://doi.org/10.1111/imj.14691
Hembree, W. C., Cohen-Kettenis, P. T., Gooren, L., Hannema, S. E., Meyer, W. J., Murad, M. H., Rosenthal, S. M., Safer, J. D., Tangpricha, V., & T'Sjoen, G. G. (2017). Endocrine treatment of gender-dysphoric/gender-incongruent persons: An endocrine society clinical practice guideline. *The Journal of Clinical Endocrinology & Metabolism, 102*(11), 3869–3903. https://doi.org/10.1210/jc.2017-01658
Hirshkowitz, M., Whiton, K., Albert, S. M., Alessi, C., Bruni, O., DonCarlos, L., Hazen, N., Herman, J., Adams Hillard, P. J., Katz, E. S., Kheirandish-Gozal, L., Neubauer, D. N., O'Donnell, A. E., Ohayon, M., Peever, J., Rawding, R., Sachdeva, R. C., Setters, B., Vitiello, M. V., & Ware, J. C. (2015). National Sleep Foundation's updated sleep duration recommendations. *Sleep Health, 1*(4), 233–243. https://doi.org/10.1016/j.sleh.2015.10.004
Horton, C. (2024). Experiences of puberty and puberty blockers: Insights from trans children, trans adolescents, and their parents. *Journal of Adolescent Research, 39*(1), 77–103. https://doi.org/10.1177/07435584221100591
Hossain, M. G., Islam, S., Aik, S., Zaman, T. K., & Lestrel, P. E. (2010). Age at menarche of university students in Bangladesh: Secular trends and association with adult anthropometric measures and socio-demographic factors. *Journal of Biosocial Science, 42*(5), 677–687. https://doi.org/10.1017/S0021932010000210
Hoyt, L. T., Niu, L., Pachucki, M. C., & Chaku, N. (2020). Timing of puberty in boys and girls: Implications for population health. *SSM - Population Health, 10*, 100549. https://doi.org/10.1016/j.ssmph.2020.100549
Hyde, J. (2005). The gender similarities hypothesis. *American Psychologist, 60*, 581–592. https://doi.org/10.1037/0003-066X.60.6.581
Icenogle, G., & Cauffman, E. (2021). Adolescent decision making: A decade in review. *Journal of Research on Adolescence, 31*(4), 1006–1022. https://doi.org/10.1111/

jora.12608
Jansen, E. C., Herrán, O. F., & Villamor, E. (2015). Trends and correlates of age at menarche in Colombia: Results from a nationally representative survey. *Economics & Human Biology, 19*, 138–144. https://doi.org/10.1016/j.ehb.2015.09.001
Jorgensen, S. C., Athéa, N., & Masson, C. (2024). Puberty suppression for pediatric gender dysphoria and the child's right to an open future. *Archives of Sexual Behavior*, *53*(5), 1941–1956. https://doi.org/10.1007/s10508-024-02850-4
Kaplowitz, P. B. (2008). Link between body fat and the timing of puberty. *Pediatrics, 121*(Supplement_3), S208-S217. https://doi.org/10.1542/peds.2007-1813F
Keats, E. C., Rappaport, A. I., Jain, R., Oh, C., Shah, S., Bhutta, Z. A., (2018). The dietary intake and practices of adolescent girls in low- and middle- income countries: A systemic review. *Nutrients, 10*(12), 1978.
Kelly, Y., Zilanawala, A., Sacker, A., Hiatt, R., & Viner, R. (2016). Early puberty in 11-year-old girls: Millennium Cohort Study findings. *Archives of Disease in Childhood, 102*(3), 232–237. https://doi.org/10.1136/archdischild-2016-310475
Kindblom, J. M., Lorentzon, M., Norjavaara, E., Lonn, L., Brandberg, J., Angelhed, J. E., Hellqvist, A., Nilsson, S., & Ohlsson, C. (2006). Pubertal timing is an independent predictor of central adiposity in young adult males: The Gothenburg osteoporosis and obesity determinants study. *Diabetes*, *55*(11), 3047–3052. https://doi.org/10.2337/db06-0192
Kumar, B., Robinson, R., & Till, S. (2015). Physical activity and health in adolescence. *Clinical Medicine, 15*(3), 267. https://doi.org/10.7861/clinmedicine.15-3-267
Lee, G. (2020). Exploring environmental constraints that hinder the physical activity of middle school girls in daily life: Photo-voice. *Korean Journal of Sport Science, 31*(2), 275–292. https://doi.org/10.24985/kjss.2020.31.2.275 https://doi.org/10.1016/j.childyouth.2020.104850
Lehman, P. J., & Carl, R. L. (2017). Growing pains: When to be concerned. *Sports Health, 9*(2), 132–138. https://doi.org/10.1177/1941738117692533
Lee, H. Y., Kim, I., Nam, S., & Jeong, J. (2020). Adverse childhood experiences and the associations with depression and anxiety in adolescents. *Children and Youth Services Review*, Article *111*, 104850.
McEvoy, D., Brannigan, R., Cooke, L., Butler, E., Walsh, C., Arensman, E., & Clarke, M. (2023). Risk and protective factors for self-harm in adolescents and young adults: An umbrella review of systematic reviews. *Journal of Psychiatric Research.*, 168, 353–380. https://doi.org/10.1016/j.jpsychires.2023.10.017
Mendle, J., Turkheimer, E., & Emery, R. E. (2007). Detrimental psychological outcomes associated with early pubertal timing in adolescent girls. **Developmental Review, 27**(2), 151–171. https://doi.org/10.1016/j.dr.2006.11.001
Merikangas, K. R., He, J-P., Burstein, M., Swanson S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., Swendsen, J. Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication--Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(10), 980–989. https://doi.org/10.1016/j.jaac.2010.05.017
Moore, M., & Meltzer, L. J. (2008). The sleepy adolescent: Causes and consequences of sleepiness in teens. *Paediatric Respiratory Reviews*, *9*(2), 114–121. https://doi.org/10.1016/j.prrv.2008.01.001
National Institute of Mental Health. (2017). *Any anxiety disorder*. U.S. Department of Health and Human Services. https://www.nimh.nih.gov/health/statistics/anyanxiety-disorder
National Institute of Mental Health. (2017). *Major depression*. U.S. Department of Health and Human Services. https://www.nimh.nih.gov/health/statistics/majordepression
National Institute of Mental Health. (2023). *Mental illness*. U.S. Department of Health and Human Services. https://www.nimh.nih.gov/health/statistics/mental-illness#part_2632
Nieh, H. P., Chang, L. Y., Chang, H. Y., Chiang, T. L., & Yen, L. L. (2019). Pubertal timing, parenting style, and trajectories of pornography use in adolescence: Peer pornography use as the mediator. *The Journal of Sex Research*, 57(1), 29–41. https://doi.org/10.1080/00224499.2019.1623163
National Institute of Mental Health. (2024, December). *Eating disorders*. https://www.nimh.nih.gov/health/topics/eating-disorders
Ohlsson, C., Bygdell, M., Nethander, M., & Kindblom, J. (2020). Early puberty and risk for type 2 diabetes in men. *Diabetologia 63*(6), 1141–1150. https://doi.org/10.1007/s00125-020-05121-8
Onyiriuka, A. N., & Egbagbe, E. E. (2013). Anthropometry and menarcheal status of adolescent Nigerian urban senior secondary school girls. *International Journal of Endocrinology and Metabolism*, *11*(2), 71. https://doi.org/10.5812/ijem.8052
Oppermann, J., Knechtle, B., Seffrin, A., Vancini, R. L., Barbosa de Lira, C. A., Hill, L., & Santos Andrade, M. (2022). Sex difference in female and male ice swimmers for different strokes and water categories over short and middle distances: A descriptive study. *Sports Medicine - Open 8*(63). https://doi.org/10.1186/s40798-022-00451-w
Owens, J., Adolescent Sleep Working Group, Committee on Adolescence, Au, R., Carskadon, M., Millman, R., Wolfson, A., Braverman, P. K., Adelman, W. P., Breuner, C. C., Levine, D. A., Marcell, A. V., Murray, P. J., & O'Brien, R. F. (2014). Insufficient sleep in adolescents and young adults: An update on causes and consequences. *Pediatrics*, 134(3), 921–932. https://doi.org/10.1542/peds.2014-1696
Pastore, M., Indrio, F., Bali, D., Vural, M., Giardino, I., & Pettoello-Mantovani, M. (2023). Alarming increase of eating disorders in children and adolescents. *The Journal of Pediatrics*, *263*. https://doi.org/10.1016/j.jpeds.2023.113733
Pavone, V., Lionetti, E., Gargano, V., Evola, F. R., Costarella, L., & Sessa, G. (2011). Growing pains: A study of 30 cases and a review of the literature. *Journal of Pediatric Orthopaedics, 31*(5), 606–609. https://doi.org/10.1097/BPO.0b013e318220ba5e
Peykari, N., Eftekhari, M. B., Tehrani, F. R., Afzali, H. M., Hejazi, F., Atoofi, M. K., Qorbani, M., Asayesh, H., & Djalalinia, S. (2015). Promoting physical activity participation among adolescents: The barriers and the suggestions. *International Journal of Preventive Medicine, 6*(1). https://doi.org/10.4103/2008-7802.151820
Piras, G. N., Bozzola, M., Bianchin, L., Bernasconi, S., Bona, G., Lorenzoni, G., Buzi, F., Rigon, F., Tonini, G., De Sanctis, V., & Perissinotto, E. (2020). The levelling-off of the secular trend of age at menarche among Italian girls. *Heliyon*, 6(6). https://doi.org/10.1016/j.heliyon.2020.e04222
Portela-Pino et al., 2019
Q da Luz, F., Hay, P., Wisniewski, L., Cordas, T., & Sainsbury, A. (2021). The treatment of binge eating disorder with cognitive behavior therapy and other therapies: An overview and clinical considerations. *Obesity Reviews, 22*(5), e13180. https://doi.org/10.1111/obr.13180
Qian, J., Wu, Y., Liu, F., Zhu, Y., Jin, H., Zhang, H., Wan, Y., Li, C., & Yu, D. (2021). An update on the prevalence of eating disorders in the general population: A systematic review and meta-analysis. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 27, 415–428. https://doi.org/10.1007/s40519-021-01162-z
Rapee, R. M., Oar, E. L., Johnco, C. J., Forbes, M. K., Fardouly, J., Magson, N. R., & Richardson, C. E. (2019). Adolescent development and risk for the onset of social-emotional disorders: A review and conceptual model. *Behaviour Research and Therapy, 123*, 103501. https://doi.org/10.1016/j.brat.2019.103501
Roser, M., Appel, C., & Ritchie, H. (2021). *Human height*. Our World in Data. https://ourworldindata.org/human-height
Rubin, C., Maisonet, M., Kieszak, S., Monteilh, C., Holmes, A., Flanders, D., Heron, J., Golding, J., McGeehin, M., Marcus, M. (2009). Timing of maturation and predictors of menarche in girls enrolled in a contemporary British cohort. *Paediatric and Perinatal Epidemiology, 23*(5), 492–504. https://doi.org/10.1111/j.1365-3016.2009.01055.x
Ryan, C., D. Huebner, R. M. Diaz, and J. Sanchez. (2009). Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics, 123*(1), 346–352. https://doi.org/10.1542/peds.2007-3524
Schapiro, N. A., & Mihaly, L. K. (2021). The 21st Century Cures Act and challenges to adolescent confidentiality. *Journal of Pediatric Health Care, 35*(4), 439–442. https://doi.org/10.1016/j.pedhc.2021.03.005
Schell, L. M., & Rousham, E. K. (2022). Environmental effects on growth. In *Human growth and development* (pp. 261–315). Academic Press.
Seaton, E. K., & Carter, R. (2018). Pubertal timing, racial identity, neighborhood, and school context among Black adolescent females. *Cultural Diversity & Ethnic Minority Psychology, 24*(1), 40–50. https://doi.org/10.1037/cdp0000162
Seaton, E. K., White, R. M. B., Pasco, M. C., & Sheehan, C. (2022). The associations among racial discrimination, pubertal timing, neighborhoods, and mental health among U.S. Mexican boys. *The American Psychologist, 77*(5), 678–690. https://doi.org/10.1037/amp0000977
Sharko, M., Wilcox, L., Hong, M. K., & Ancker, J. S. (2018). Variability in adolescent portal privacy features: How the unique privacy needs of the adolescent patient create a complex decision-making process. *Journal of the American Medical Informatics Association, 25*(8), 1008–1017. https://doi.org/10.1093/jamia/ocy042
Sharman, R., & Illingworth, G. (2020). Adolescent sleep and school performance—the problem of sleepy teenagers. *Current Opinion in Physiology, 15*, 23–28.
Slater, A., & Tiggemann, M. (2011). Gender differences in adolescent sport participation, teasing, self-objectification and body image concerns. *Journal of Adolescence, 34*(3),455463. https://doi.org/10.1016/j.adolescence.2010.06.007
Slater, A., & Tiggemann, M. (2010). "Uncool to do sport": A focus group study of adolescent girls' reasons for withdrawing from physical activity. *Psychology of Sport and Exercise, 77*(6), 619–626. https://doi.org/10.1016/j.psychsport.2010.07.006
Smink, F. R. E., van Hoeken, D., Oldehinkel, A.J., & Hoek, H.W.(2014). Prevalence and severity of DSM-5 eating disorders in a community cohort of adolescents. *International Journal of Eating Disorders, 47*(6), 610–619. https://doi.org/10.1002/eat.22316
Sørensen, K., Mouritsen, A., Aksglaede, L., Hagen, C. P., Mogensen, S. S., & Juul, A. (2012). Recent secular trends in pubertal timing: Implications for evaluation and diagnosis of precocious puberty. *Hormone Research in Paediatrics, 77*(3), 137–145. https://doi.org/10.1159/000336325
Spear, L. P. (2013). Adolescent neurodevelopment. *Journal of Adolescent Health, 52*(2), S7–S13. https://doi.org/10.1016/j.jadohealth.2012.05.006
Steinberg, L. (2014). *Age of opportunity: Lessons from the new science of adolescence*. Houghton Mifflin Harcourt.
Steinberg, L., & Scott, E. S. (2003). Less Guilty by Reason of Adolescence: Developmental Immaturity, Diminished Responsibility, and the Juvenile Death Penalty. *American Psychologist, 58*(12), 1009–1018. https://doi.org/10.1037/0003-066X.58.12.1009
Susie Lee, D., & Semenchenko, H. (2023). Father absence and pubertal timing in Korean boys and girls. *Evolution, Medicine, and Public Health, 11*(1), 174–184. https://doi.org/10.1093/emph/eoad010
Taylor, D., Jenni, O., Acebo, C., & Carskadon, M. (2005). Sleep tendency during extended wakefulness: Insights into adolescent sleep regulation and behavior. *Journal of*

Sleep Research, 14, 239–244. https://doi.org/10.1111/j.1365-2869.2005.00467.x
Udo, T., & Grilo, C. M. (2018). Prevalence and correlates of DSM-5–defined eating disorders in a nationally representative sample of U.S. adults. *Biological Psychiatry, 84*(5), 345–354. https://doi.org/10.1016/j.biopsych.2018.03.014
Vankerckhoven, L., Claes, L., Raemen, L., Palmeroni, N., Eggermont, S., & Luyckx, K. (2024). Longitudinal associations among identity, internalization of appearance ideals, body image, and eating disorder symptoms in community adolescents and emerging adults: Adaptive and maladaptive pathways. *Journal of Youth and Adolescence (54)*, 290–309. https://doi.org/10.1007/s10964-024-02058-8
Wasserman, D., Carli, V., Iosue, M., Javed, A., & Herrman, H. (2021). Suicide prevention in childhood and adolescence: A narrative review of current knowledge on risk and protective factors and effectiveness of interventions. *Asia-Pacific Psychiatry, 13*(3), e12452. https://doi.org/10.1111/appy.12452
Wheaton, A. G., Jones, S. E., Cooper, A. C., Croft, J. B. (2018). Short sleep duration among middle school and high school students - United States, 2015. Morbidity and Mortality Weekly Report (MMWR), 67(3), 85–90.
White, R. M. B., Deardorff, J., Liu, Y., & Gonzales, N. A. (2013). Contextual amplification or attenuation of the impact of pubertal timing on Mexican-origin boys' mental health symptoms. *Journal of Adolescent Health, 53*(6), 692–698. https://doi.org/10.1016/j.jadohealth.2013.07.007
Winsler, A., Deutsch, A., Vorona, R. D., Payne, P. A., & Szklo-Coxe, M. (2015). Sleepless in Fairfax: The difference one more hour of sleep can make for teen hopelessness, suicidal ideation, and substance use. *Journal of Youth and Adolescence, 44*(2), 362–378. https://doi.org/10.1007/s10964-014-0170-3
Wohlfahrt-Veje, C., Mouritsen, A., Hagen, C. P., Tinggaard, J., Mieritz, M. G., Boas, M., Petersen, J. H., Skakkebæk, N. E., & Main, K. M. (2016). Pubertal onset in boys and girls is influenced by pubertal timing of both parents. *The Journal of Clinical Endocrinology & Metabolism, 101*(7), 2667–2674. https://doi.org/10.1210/jc.2016-1073
Young, K. S., Sandman, C. F., & Craske, M. G. (2019). Positive and negative emotion regulation in adolescence: Links to anxiety and depression. *Brain Sciences, 9*(4), 76. https://doi.org/10.3390/brainsci9040076
Zimmer-Gembeck, M. J., Webb, H. J., Farrell, L. J., & Waters, A. M. (2018). Girls' and boys' trajectories of appearance anxiety from age 10 to 15 years are associated with earlier maturation and appearance-related teasing. *Development and Psychopathology, 30*(1), 337–350. https://doi.org/10.1017/S0954579417000657

9.2 Puberty, Sexual Behavior, and Sexual Health in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the changes involved in puberty and the ranges of pubertal timing
- Describe current statistics on adolescent sexual behavior
- Describe factors related to early sexual intercourse and associated health risks including unplanned pregnancy and STIs
- Identify the various types of sex education and the ways they impact sexual health and behaviors

Braden and Ashley were both sixteen years old when they met and have been in a relationship for two years. They became each other's first sexual partners and have been enjoying that intimacy for the past year. Ashley began taking the birth control pill a few months after they started having intercourse, and they agreed to use external condoms as a backup method of contraception and to prevent contracting any STIs. Recently, though, Ashley calls Braden less often and the frequency of sexual activity has also declined, as their relationship changes over time. During puberty and the adolescent period, many teens become curious about their bodies and may begin having sexual experiences and relationships; physical and emotional development and characteristics, sociocultural differences, self-esteem, and sexuality all influence the scope, timing, and pace of these experiences.

Puberty

The term **puberty** describes the process of a child's transition to physical and reproductive maturity, and the period during which it occurs. Puberty lasts for about four years on average. It typically begins between the ages of eight and thirteen years in females, and between nine and fourteen years in males (NIH, 2024). Its onset is influenced by many factors, both biological and environmental.

The visible signs of puberty are evident in physical developments that are categorized into primary sex characteristics and secondary sex characteristics. The **primary sex characteristics** are physical developments that are directly related to the ability to reproduce: changes in the ovaries and uterus in females, and the testes and penis in males. For males, **spermarche** (sometimes called semenarche) is the first ejaculation; this marks the start of the ability to reproduce. This first ejaculation is often experienced as a nocturnal emission, or while they are asleep. For females, **menarche**, the onset of menstruation, marks this stage. The **secondary sex characteristics** are physical developments that accompany primary sex characteristics but are not directly related to the ability to reproduce. These include breast development in females (called thelarche), growth of underarm and pubic hair (adrenarche) in both sexes, and facial hair and a deepening voice in males.

The timing of the onset of puberty varies from individual to individual, but typically these developments follow the same sequence of changes. Biological, environmental, and sociocultural factors play a role in this timing. Figure 9.4 shows the typical timelines for various aspects of pubertal development in males and females.

Notice, for example, that some of the earliest changes for females are growth of the ovaries and breasts, while for males, growth of the testis occurs before other aspects of puberty.

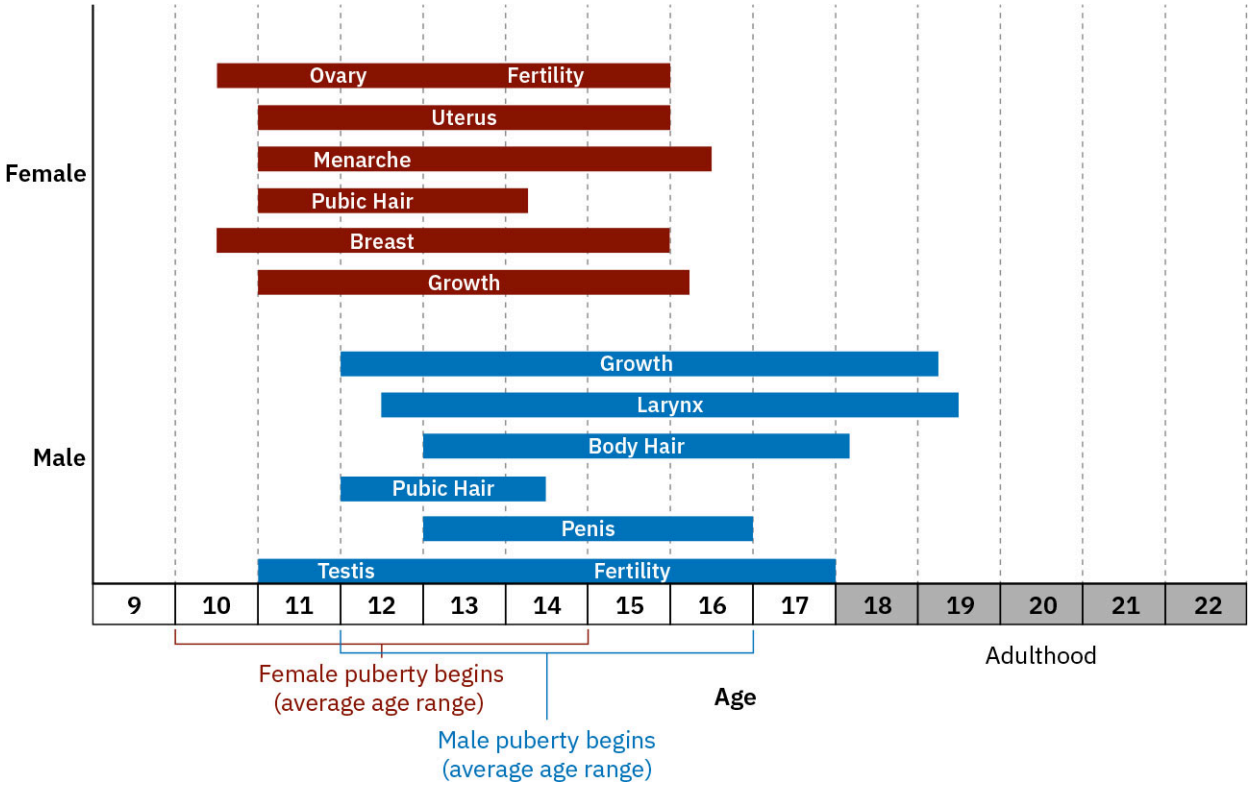


FIGURE 9.4 On average, the onset of puberty begins earlier for females than it does for males. The duration of puberty is roughly similar for males and females, typically lasting around four to five years. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Biological Factors Affecting Pubertal Development and Timing

The onset of puberty is influenced by a variety of biological factors, including genetics, physical changes in the body's muscle and fat mass, production of hormones, the functioning of the hypothalamus-pituitary (HPA) axis, and the development of puberty-related glands (Figure 9.5).

Gland and Hormone Function in Puberty		
Female	**GLAND and HORMONES**	**Male**
Regulation of circadian rhythm and onset of fertility	Pineal *Melatonin*	Regulation of circadian rhythm and timing of puberty
Osmoregulation Menstrual cycle Cell growth and division Labor contractions Milk production	Pituitary *ADH* *FSH/LH* *Growth hormone* *Oxytocin* *Prolactin*	Osmoregulation Cell growth and division
Metabolism	Thyroid *Thyroxin*	Metabolism
Fight-or-flight response Stress regulation	Adrenal *Adrenaline* *Cortisol*	Fight-or-flight response Stress regulation
Blood sugar regulation	Pancreas *Insulin* *Glucagon*	Blood sugar regulation
Menstrual cycle Secondary sexual characteristics	Ovaries *Estrogen* *Progesterone*	
	Testes *Testosterone*	Secondary sexual characteristics

FIGURE 9.5 Glands and hormones are responsible for initiating and regulating pubertal development in males and females, and there are key similarities and differences between the sexes. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The HPA is essential for physical and sexual development during puberty (Figure 9.6). At the beginning of puberty, the hypothalamus signals the pituitary gland to release sex-specific hormones that act on the testes in males and ovaries and females. The brain releases a hormone called gonadotropin-releasing hormone (GnRH). GnRH triggers the pituitary gland—a small but significant gland that controls the production of several major hormones—to secrete follicle-stimulating hormone (FSH) and luteinizing hormone (LH) into the bloodstream. This in turn begins the series of changes that are associated with puberty, transforming the body to be capable of reproduction.

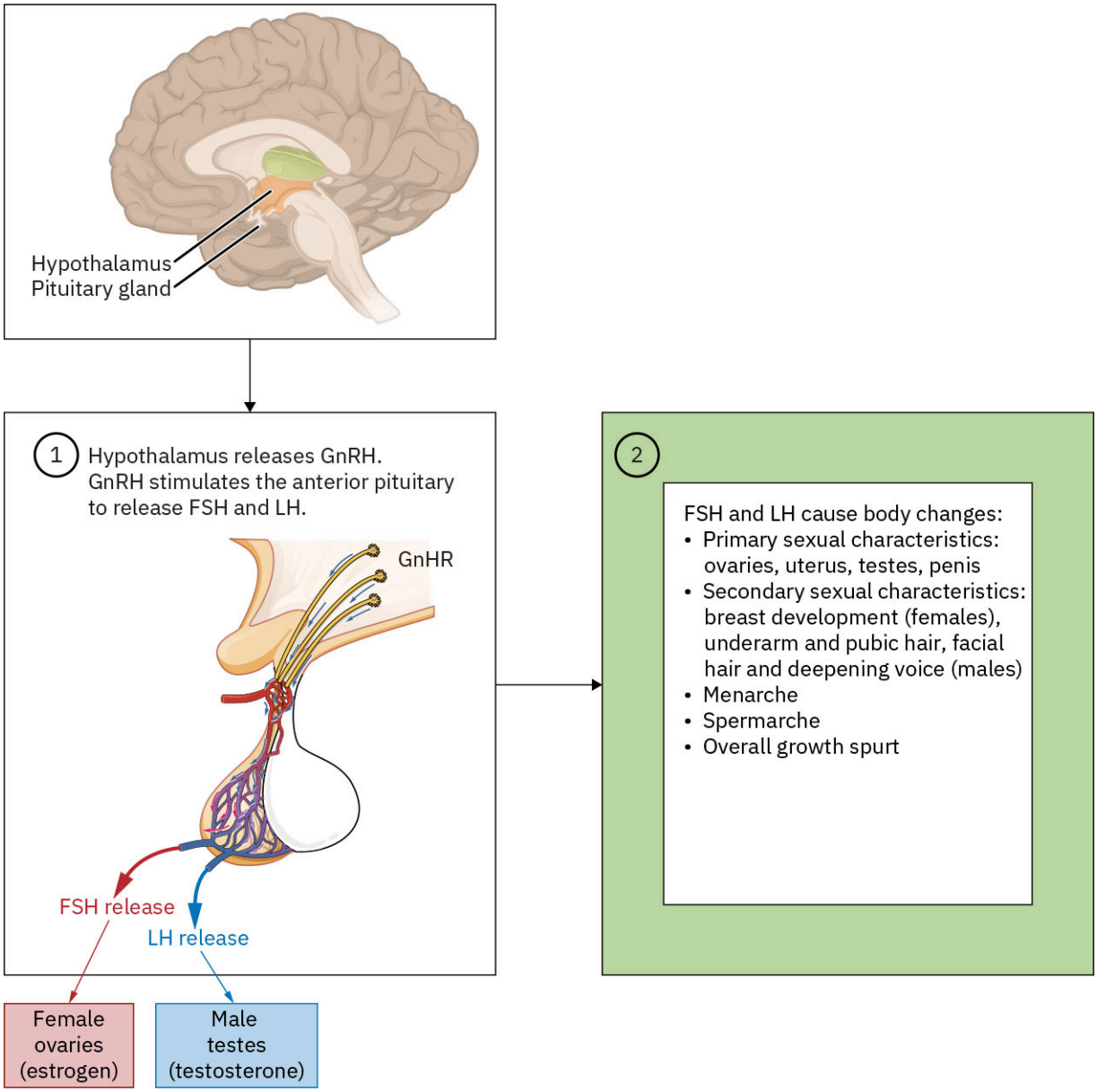


FIGURE 9.6 The hypothalamus triggers the pituitary gland to release hormones that stimulate the testes in males and the ovaries in females, leading to the physical and sexual changes associated with puberty. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

LINK TO LEARNING

Watch this 2-minute neuroscience video about the hypothalamus and pituitary gland (https://openstax.org/r/104HypoPit) to understand their roles and how they interact.

Factors such as early activation of the HPA, family history, genetic variations, and dealing with additional stressors are known predictive factors for early onset of puberty in females and males (Farello et al., 2019; Gaydosh et al., 2018). Additionally, in females, a certain amount of body fat is necessary for the onset of puberty for two reasons: first, a body composition that is low in fat might not have enough energy stored to support the physical changes that come with puberty. Second, body fat is linked to the production of estrogen, a key hormone in the development of the female reproductive system and the maintenance of its functions. Adequate levels of estrogen are needed for the development of primary sexual characteristics like the

regulation of the menstrual cycle, as well as secondary sexual characteristics like breast development. The hormone leptin is also thought to play a role in triggering puberty (Ahmed et al., 1999; Blum et al., 1997; Evans et al., 2022), and it is released into the bloodstream by adipose tissue (fat stores). When fat stores are at a level sufficient to indicate a healthy adolescent, leptin may signal the hypothalamus to begin releasing the cascade of hormones that sets puberty in motion (Murray & Clayton, 2013). Thus, the intricate interplay between genetics, stress, body fat, and hormones influences the timing of puberty in females.

In males, the timing of puberty is less understood. Similar to females, higher levels of central fat mass distribution were found to be associated with early onset of puberty (Kindblom et al., 2006); however, the role of leptin and the underlying mechanism of its role were not clear (Kaplowitz, 2008). A longitudinal study found that the higher weight prior to puberty could predict the onset of puberty and could be a better predictor of puberty onset than BMI (Bygdell et al., 2021). Additionally, other researchers have found a link to earlier onset of puberty and higher type 2 diabetes risk (Ohlsson et al., 2020), which might have implications for males as they get older.

The timing of puberty has a strong genetic component (Hoyt et al., 2020). The age at which an individual's biological parents went through puberty is a strong determinant in the timing of puberty for their adolescent offspring (Wohlfahrt-Veje et al., 2016). Although timing of parents' puberty is the strongest predictor of puberty, sociocultural factors also play a role. For example, a study on Korean adolescents found that boys without their fathers present in the household experienced spermarche about three months earlier than those with their fathers present, though there were no differences in timing of menarche for girls (Susie Lee & Semenchanko, 2023). In contrast, a study on adolescents in the United States found that girls whose fathers were absent experienced puberty earlier (Gaydosh et al., 2018). Additionally, Arim et al. (2011) found that low socioeconomic status (SES) predicted early puberty in Canadian males and females. Researchers still do not fully understand these sociocultural influences, though many speculate that factors like family stress may speed up the onset of puberty. It is important to consider the implications of both nature and nurture as well as the ways nature and nurture interact to shape development.

Environmental and Sociocultural Factors Affecting Pubertal Development and Timing

Psychologists most often measure the timing of puberty by self-report. Adolescent girls are asked to report the date of their first menstrual cycle, while boys are often asked about the development of various secondary sex characteristics (Hoyt et al., 2020). Recall that for males, puberty starts with the first ejaculation, but often males are not able to clearly recall that event, whereas females can often accurately identify their first menstrual cycle. These data are key to understanding potential links to health outcomes later in life. Pubertal timing can influence age at sexual initiation, learning and growth, and physiological health (Leone & Brown, 2020; Torvik et al., 2021).

Environmental factors related to the timing of puberty have been most extensively explored in females, potentially because of concerns related to the health risks commonly found in early-maturing girls, such as unplanned and early pregnancies and increased risks of gender-based violence (Sommer et al., 2014). Research on males may have also been less common because adolescent males are less likely to discuss spermarche (Frankel, 2002). In fact, even though adolescent males commonly learned about puberty from their parents, most report that nobody talked to them about spermarche, either before or after (Frankel, 2002; Mercer & Drew, 2021). This may be in part because spermarche is most common at night during sleep, which affords males some greater privacy in the experience, whereas menarche's timing is less predictable. Most adolescent females report having advance knowledge or conversations in preparation for menarche, most often with their mother (Sooki et al., 2016).

In females, individual and environmental factors in pubertal timing include nutrition, body weight, household composition, exercise, environmental chemicals, and overall levels of stress. While acute stress may delay puberty for teens of disadvantaged SES in lower- and middle-income countries due to stunted growth (because of the lack of ample nutritious foods), emotional and behavioral difficulties could bring puberty onset forward

by reducing physical activity and encouraging an unhealthy diet (Kelly et al., 2016). On the contrary, a lower SES is typically linked to a higher risk of overweight/obesity and a faster pace of physical and sexual maturation in high-resource environments like the United States. Furthermore, disparities in the timing of puberty among historically oppressed groups reflect the stress and impacts of systemic racism (Bleil et al., 2017; Glass et al., 2022).

Psychologists studying pubertal timing also ask adolescents whether they feel they look older than (an indicator of early puberty), younger than (an indicator of late puberty), or the same age (on time) as their peers. This is called peer-relative timing. In researching the consequences of pubertal timing, psychologists often measure two possibilities—whether early onset of puberty alone is associated with various outcomes or whether the significant factor is being "off-time"—whether early or late relative to peers. For instance, developmental research indicates that girls who experience early puberty are more likely to engage in risk-taking behaviors, begin sexual activity earlier, use tobacco and alcohol more frequently, and experience higher rates and higher severity of depression, anxiety and other mental health risks, and an increased risk of relationship difficulties (Graber, 2013; Mendle et al., 2007; Rapee et al., 2019). Overall, earlier pubertal timing, both objectively and relative to peers, put both girls and boys at risk during adolescence, while later timing was somewhat protective (Table 9.2).

Females		Males	
Adolescent Health Outcomes		Adolescent Health Outcomes	
Early-Onset	Late-Onset	Early-Onset	Late-Onset
More socioemotional symptoms including depression and anxiety	Less antisocial behaviors	More antisocial behaviors	More depressive symptoms
More risk-taking behavior	Lower risk-taking behaviors	More risk-taking behaviors	Less antisocial behaviors
Victim of bullying/teasing	Less physical activity	Less sleep hours	Less physical activity
Higher BMI	Lower BMI	Higher BMI	Lower BMI
Higher self-reported good health in young adulthood	More depressive symptoms	Lower screen time in young adulthood	More sleep hours

TABLE 9.2 Common Outcomes of Early-Onset and Late-Onset Pubertal Timing in Adolescent Females and Males (sources: Graber, 2013; Hoyt et al., 2020; Mendle et al., 2007; Rapee et al., 2019; and Zimmer-Gembeck et al., 2018)

Hoyt and colleagues (2020) used a nationally representative longitudinal data set that followed adolescents into young adulthood. Their findings are consistent with previous studies that supported the early-timing hypothesis. If a teen hits puberty very early (before 84 percent of their peers), it is associated with several negative consequences. In females, it is linked to increased health risks and higher BMI. Higher BMI can, in turn, result in early physical maturation, growth of breasts, and teasing about appearance. Thus, early-maturing females are at a higher risk of appearance-related anxiety, eating disorders, and body dysmorphia symptoms (Zimmer-Gembeck et al., 2018). Males who enter puberty earlier than peers report more risk-taking behavior, more drug use (Dudovitz et al., 2015), more sex partners, more sleep, and higher BMI (Hoyt et al., 2020). Late-onset puberty for boys, however, may increase some risks such as depressive symptoms and lower physical activity (Hoyt et al., 2020). When it comes to the timing of puberty, research overall indicates it is a little easier for youth who are on time or late-onset, than for those who are early-onset.

Adolescents experiencing early-onset puberty have additional challenges: their bodies might be changing before they are emotionally mature enough to handle the impacts presented by secondary sexual characteristics such as breasts. This can put them at risk of gaining attention from older teens and adults who may expose them to behaviors they are unprepared for, such as early sexual experiences (Mendle et al., 2007), exposure to pornography (Nieh et al., 2019), or experimentation with substance use (Castellanos-Ryan et al., 2013). Being at a higher risk does not mean the adolescent will definitely experience negative outcomes, and many early-onset adolescents overcome the challenges of early puberty in adulthood or never experience these risks due to a supportive environment. For example, there are many protective factors that can reduce risks related to off-time puberty, especially high-quality caregiving including higher warmth (e.g., authoritative parent), better communication, and the caregiver having more awareness of how the adolescent spends their time (Mrug et al., 2008).

On a historical note, a long-standing trend is apparent in the timing of pubertal onset. In Western regions like the United States and Europe, age at menarche declined dramatically from about seventeen years in the early nineteenth century to about thirteen years by the middle of the twentieth century. Starting in the 1960s, the age of onset of puberty seemed to have leveled off in Europe and the United States, although minor but significant declines of two and a half to four months have been reported during the past twenty-five years (Aksglaede et al., 2009; Eckert-Lind et al., 2020; Rubin et al., 2009; Sorensen et al., 2012). This tendency is an example of a **secular trend**. A secular trend is a long-term trend that lasts for several years or even decades as it manifests in the living conditions of a population and highlights any imbalance in health trends within the same population.

The most likely explanation for the decline in age of menarche is that nutrition has steadily improved, generation over generation, allowing for the body to more effectively prepare for the physical changes of puberty. Higher SES is also predictive of an earlier age of menarche, most likely because greater access to resources typically allows for greater nutritional access. In some countries, a similar link has been found between higher socioeconomic status and declining age at menarche. For instance, in the Philippines, earlier menarche was characteristic of girls who lived in urban, higher SES households, characterized by higher maternal education, better housing, and household asset ownership (Adair, 2001). Also, studies in Nigeria and Bangladesh found that girls from families of higher SES, as indicated by parental education and/or occupation, had an earlier age at menarche compared to girls from families of lower SES (Hossain et al., 2010; Onyiriuka & Egbagbe, 2013). One study done in Italy additionally suggests that the age at menarche has started to level off because socioeconomic conditions such as nutrition and hygiene have stopped improving (Piras et al., 2020).

The timing of puberty and related experiences also varies considerably by race and ethnicity. Black girls experience pubertal changes such as breast growth, pubic hair development, and menarche earlier than non-Black girls (Keenan et al., 2014; Osinubi et al., 2022). Early childhood stress and trauma due to discrimination and racism may disproportionately affect Black girls' HPA activation resulting in earlier puberty (Warner, 2017). For Black, White, and Hispanic girls, household stress and instability are often associated with both earlier puberty and earlier menarche, though this association was not found for Asian and Pacific Islander youth (Aghaee et al., 2020).

Extensive research suggests that sociocultural experiences during puberty can have long-lasting effects on youth development. Specifically, social-contextual factors, including parental and peer relationships, school experience, and neighborhood conditions, are associated with increased risks of delinquency or lower social competence for boys with earlier puberty (Klopack et al., 2020). For girls who experience puberty earlier, peer pressure, harsh parenting, and environmental uncertainty increase risks of delinquency and other externalizing behaviors (Klopack et al., 2020; Najman et al., 2009).

Additionally, researchers have found that how puberty timing affects mental health can vary based on race and ethnicity, especially when considering other environmental factors. For example, early-maturing Hispanic females and males experienced more mental health issues when inhabiting areas with a significant proportion

of White population (Seaton et al., 2022; White et al., 2013). Relatively late maturing African American females reported more difficulty internalizing after facing peer victimization (Hamlat et al., 2014), and those with a strong sense of racial identity experienced more difficulties in predominantly White schools (Seaton & Carter, 2018). Thus, minoritized teens undergoing off-time puberty display higher risk for psychological problems within low ethnic minority schools and communities.

LINK TO LEARNING

Watch this overview of what adolescence means and the role of puberty (https://openstax.org/r/104puberty1) during this time. This helpful recap highlights the biological basis of puberty and discusses some of the social factors teens experience.

Adolescent Sexual Behaviors

The development of an adolescent's sexuality and sexual behavior involves exploring the motivational and functional components of sexuality, such as sexual desire, sexual arousal, and sexual function, that are critical to understanding adult sexual life. Adolescent sexuality is shaped by a variety of contextual factors from the individual level (e.g., biological and neurological growth, personality, gender identity) to social-contextual environmental levels (e.g., influences from parents and peers, school and neighborhood influences) to the broader cultural contextual levels (e.g., media, cultural values) (Kar et al., 2015). This results in wide variability in adolescent sexual behaviors, interests, and overall sexuality.

Sexual activity encompasses a wide range of behaviors aimed at experiencing pleasure or intimacy, including both solitary activities (like masturbation) and partnered activities (like kissing, touching, oral sex, vaginal intercourse, and anal intercourse). Partnered activities may or may not involve physical contact. For example, sending sexual text messages (sexts) or other verbal communication is still a form of sexual activity. "Having sex" commonly refers to sexual intercourse, which involves penetration (e.g., of the mouth, vagina, or anus), which may be done using a penis, fingers, or other objects. However, sex may also be the word used to describe other forms of sexual activity such as external stimulation of genitalia or other erogenous zones (e.g., nipples). Remember, sexual activity should always be consensual, and respecting diverse sexual orientations is crucial.

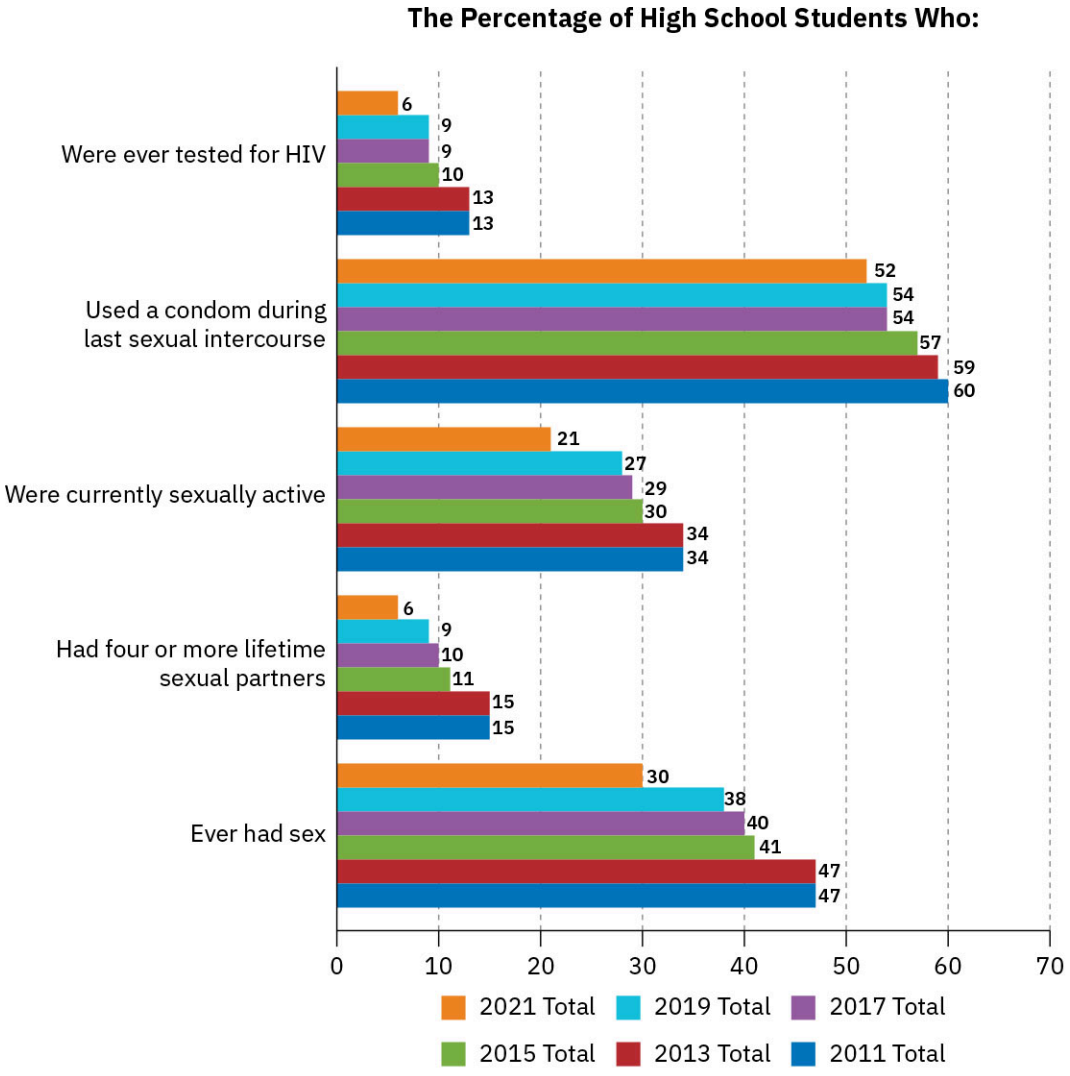
Adolescence is often a time of self-exploration, including different types of sexual practices, such as masturbation. However, teens in this developmental phase may also engage in risky sexual behaviors such as unprotected penile-vaginal intercourse (PVI) (Thoma et al., 2013) and intercourse under the influence of alcohol or drugs (Rosario et al., 2014). Hence, the development of adolescent sexuality can lead to undesirable consequences for some teens, including emotional distress, the risk of contracting STIs, and unplanned pregnancy.

The Centers for Disease Control and Prevention (CDC) has researched adolescent behaviors for several decades using a survey called the Youth Risk Behavior Surveillance System (YRBSS). Data are collected every two years on a nationally representative sample of more than 10,000 U.S. high school students in grades nine through twelve. The questionnaires are answered anonymously, and results for individual years are reported as well as trends that emerge across multiple years. These data provide a comprehensive picture of mental and physical health-related behaviors in teens.

In 2021, 30 percent of high school students reported having had sexual intercourse (CDC, 2021). Females and males reported similar rates (31 and 30 percent, respectively), and this pattern held true across ethnoracial groups, except for Asian American teens, with only 11 percent responding they had ever had sex. Further, LGBTQ+ teens reported having had sex at a slightly higher but not significantly different rate than their heterosexual peers (33 versus 29 percent, respectively).

The ten-year trend results from the YRBSS show a marked and steady decline in sexual activity. In 2011, the proportion of high school students who had ever had sex was 49 percent, but in 2021 that dropped to 30

percent. This means more than two-thirds of high school students have not had sexual intercourse. When asked to report whether they are currently sexually active, 21 percent of teens reported in the affirmative. Note that the word "intercourse" was not defined to the high school students who completed the survey, so they may have varied understandings of what counts as sexual activity or intercourse. While greater than 90 percent of adolescents are likely to think of sexual intercourse as meaning PVI, only around 60 percent think of anal sex as intercourse, and only around 20 percent think of oral sex as a form of intercourse (Lindberg et al., 2021). Since the YRBSS is not defining sexual intercourse and many adolescents interpret the term differently, any findings are subject to differences in individual knowledge and perspective. However, there is likely underreporting on surveys as many adolescents may underestimate the behaviors that count as sex or may have never had intercourse defined to them (Figure 9.7).



Source: CDC. (2021), Youth risk behavior survey: data summary & trends report

FIGURE 9.7 There was a decrease in various types of sexual related behaviors reported by high school students over the past decade. (data source: CDC; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Knowledge and attitudes regarding sexual behavior are heavily influenced by where they acquire their knowledge—most often from parents, peers, or the media. While around 61 percent of adolescents learn some level of sex education and contraception knowledge from their parents, the next most common source of information is peers (Bleakley et al., 2018). Moreover, researchers have found that teenagers who engage in

frequent discussions with their peers about sex tend to have more favorable perceptions regarding potential social advantages (such as increased popularity through sexual activity) and enjoyment linked to sex, while being less inclined to anticipate social consequences (like stigma or loss of self-esteem) associated with it (Bleakley et al., 2018; Ragsdale et al., 2014). Adolescents were also twice as likely to talk about sex with their mother/woman caregiver than their father/man caregiver, though they strongly preferred communicating with peers over either caregiver (Ragsdale et al., 2014).

Very few respondents to the 2021 YRBSS indicated they had had four or more sexual partners so far—just 6 percent—also down from the 2011 figures (18 percent for males, 13 percent for females). Of those who reported being sexually active, 52 percent reported using a condom during their most recent intercourse, 33 percent reported using hormonal birth control (such as the pill), and 10 percent reported effectively using both condoms and hormonal birth control together. The most used contraceptive method among teens between 2011 and 2015 remained the condom (reported by 97 percent of teen females), followed by withdrawal (60 percent) and the pill (56 percent) (Harper et al., 2018). These low rates of effective contraception increase the risks for unplanned pregnancy and for spreading an STI. A **sexually transmitted infection (STI)** is caused by a virus, bacteria, fungus, or parasite that can be spread through sexual contact. Several STIs such as HPV and chlamydia, often show no symptoms, so individuals might have an infection without realizing it. When an STI leads to noticeable symptoms, it is called a **sexually transmitted disease (STD)** (CDC, 2023).

LINK TO LEARNING

Teens and young adults are at a higher risk of STIs among sexually active individuals. Knowing the statistics and being informed, along with protecting yourself and getting tested for STIs, is important. Learn more about teen sexual health (https://openstax.org/r/104STIPrevent) by watching this video.

Adolescent sexual behaviors other than intercourse have also been studied. According to the CDC, 33 percent of adolescents (aged fifteen to seventeen years) have engaged in oral sex at least once (CDC, 2020). Adolescents may be more likely to engage in oral sex over vaginal intercourse because many do not consider it to "count" as sex or see its potential for leading to STI transmission (Buhi & Goodson, 2007; Strome et al., 2022). From these findings, oral sex is an important component of adolescent sexual experience and should receive attention from parents, educators, and health-care professionals.

The YRBSS also asks teens to report whether they had ever experienced any kind of sexual violence (including unwanted touching and kissing) or been forced to have sex. With an overall level of 11 percent of teens reporting such an experience, 18 percent of female adolescents and 5 percent of male adolescents have experienced some form of sexual violence. A higher proportion of American Indian/Alaskan Native youth (16 percent), multiracial youth (15 percent), and LGBTQ+ youth (22 percent) reported experiencing sexual violence compared to their peers from other racial andethnic groups. Sexual health education that includes defining sexuality and sexual behaviors while also educating adolescents on consequences, healthy relationships, and communication can reduce both the risk factors of early sexual behavior and the risks of sexual violence. For example, education on establishing communication around sexual behavior and respecting the boundaries of others can reduce perpetration of sexual violence.

Sexual Health: Early Intercourse, Adolescent Childbearing, and Sex Education

Psychologists have focused on the individual and environmental factors that predict and explain earlier first sexual intercourse, often defined as younger age at first sexual intercourse. The earlier initial intercourse happens, the greater is the increase in chances for negative health consequences. Research suggests that engaging in sexual intercourse at an early age may increase the likelihood of experiencing negative sexual health outcomes, including reproductive health problems, injuries, pregnancy complications, and socioemotional challenges with future sexual relationships. However, for some individuals, early sexual

intercourse has also been associated with positive outcomes like healthier sexual function, including less pain during vaginal penetration, better orgasmic function, and reduced sexual inhibition (Peragine et al., 2022). Some of the positive outcomes of early sexual behavior are more specifically related to sexual stimulation and orgasm, not necessarily intercourse (Peragine et al., 2022). Some research indicates that in evaluating the long-term impacts of first interpersonal sexual experiences, whether the experience was perceived as positive and enjoyable including who you are with may matter more (Peragine et al., 2023).

Psychologists have identified many factors related to early first intercourse. Studies have consistently shown that early sexual intercourse is associated with early pubertal timing (e.g., Mrug et al., 2014; Price & Hyde, 2009), likely because older or similarly maturing adolescents may give extra attention, wanted or unwanted, and even pressure early-maturing adolescents into earlier sexual activity. Early sexual activity is also negatively correlated with school achievement, which means struggling in school or not having strong academic background is a risk factor for early sexual intercourse (Lanari et al., 2020; Price & Hyde, 2009; Wheeler, 2010). Individuals with high levels of aggression and diagnoses of conduct disorders also tend to have sexual intercourse earlier (Fairchild et al., 2019).

Data from U.S. ninth-grade and eleventh-grade children who completed the Minnesota Student Survey show that the relationship between adverse childhood experiences and adolescent sexual risk behaviors and teen pregnancy is strong (Anda et al., 2006; Song & Qian, 2020). A study of teenagers in Brazil found that both personal factors like living in institutions or on the street (versus with families), repeating a school year, and using illegal drugs, as well as family factors like feeling less supported by parents and having more independence from the family, were linked to when teenagers started having sex (Furlanetto et al., 2020).

Parent-child closeness has been shown as a factor in early sexual activity. When parents are distant, adolescents may bond more strongly with their peers, who may serve as positive or negative social influences (Giletta et al., 2021). A qualitative study done in South Africa found that household poverty, family conflict, detached parenting, and lack of sex education all had a negative influence on adolescent well-being and promoted early sexual behaviors (Anyanwu et al., 2020). Taking part in religious activities has also been found to delay first sexual intercourse, especially for males. For instance, religiosity serves as a factor for abstaining from sexual activity among youth in Nigeria (Somefun, 2019).

Thus, family, school, and religious environments can affect teen behaviors and sexual activities. Some protective factors against early sexual initiation include higher socioeconomic status, affiliation with a religious group, sex education, parental monitoring, and knowledge about reproductive health (Lara & Abdo, 2016; Stephenson et al., 2014).

Adolescent Pregnancy and Childbearing

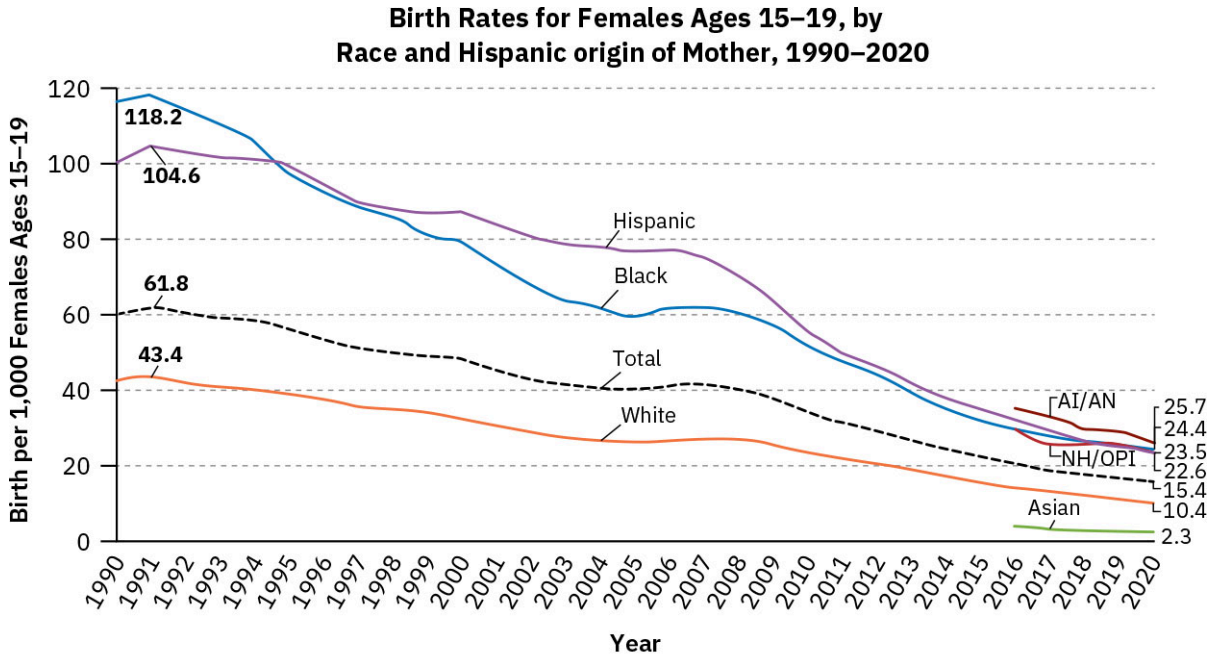
The impact of adolescents bearing their own children is well documented. Adolescents themselves are not finished with development and maturation and are thereby not as well prepared to begin raising another person. For example, a younger age of childbearing can reduce access to educational and socioeconomic advantages later in life (Wolfe et al., 2023). Indeed, adolescent parenthood hinders normative psychological development and is related to poorer psychological functioning (Huang et al., 2013; Mollborn & Morningstar, 2009). Early age of becoming a parent is also associated with a higher risk of poor parenting and intergenerational transmission of unhealthy behavioral risks, such as greater externalizing problems in children of younger caregivers (Lorber & Egeland, 2009). About 75 percent of teenage pregnancies are unplanned (Finer & Zolna, 2016).

Pregnancy and childbirth significantly affect girls' high school dropout rates. While about 90 percent of females who do not give birth as teenagers graduate from high school, the rate of high school completion for teen parents is 50 percent by the age of twenty-two years (Perper et al., 2010). Teenage mothers therefore attain a lower level of education, have lower earnings, and become more likely to use social welfare services (Gorry, 2019). Teenage mothers are also less likely to attend college and less likely to complete college when

they do attend (Diaz & Fiel, 2016). Overall, being a teenage mother often brings emotional, psychological, and social difficulties, although not all teenage mothers have the same experiences (H.H.S., 2023). Having children may motivate some teen parents to complete their education to pursue "a better life" (Harden et al., 2006) and strive for self-sufficiency (Harding et al., 2020).

Research on the experience of teenage fathers is more scarce, for several reasons. Teen mothers are less likely to put fathers' information on the birth certificate (Landry & Forrest, 1995), and teen males are less likely than older fathers to affirm paternity (Paschal, 2013). Nonetheless, paternal involvement is important, and traits linked with young fatherhood might lead to situations that increase the chances of their offspring engaging in risky sexual behavior and becoming teenage parents themselves (Bamishigbin et al., 2019). For instance, sons of teen fathers were almost twice as likely to become teenage fathers compared to sons of older fathers, even when other risk factors were taken into consideration (Sipsma et al., 2010).

A positive development is that the U.S. teen birth rate (births per 1,000 females aged fifteen to nineteen years) has been declining since 1991. Birth rates dropped from 17.4 per 1,000 females in 2018 to 15.4 in 2020, a record low (Martin et al., 2021). Rates vary significantly among ethnoracial groups, but the downward trend is occurring in all groups. In 2020, American Indian/Alaskan Native adolescent females had the highest birth rate, followed by Hispanic and Black adolescents and then White adolescents (CDC, 2017, 2022) (Figure 9.8).



Sources:
For 1990–2015: Centers for Disease Control and Prevention. (2017). Births: Final data for 2015. *National Vital Statistics Reports, 66*(1).

For 2016–2020: Centers for Disease Control and Prevention. (2022). Births: Final data for 2020. *National Vital Statistics Reports, 70*(17).

FIGURE 9.8 The U.S. teen birth rate has been declining since 1991 and reached a record low in 2020. The downward trend is evident across all ethnoracial groups. (data source: CDC; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

What accounts for these declines in adolescent childbearing rates? It is likely a combination of factors: greater access to and use of hormonal birth control and condoms, increased access to comprehensive sex education, access to family planning clinics, and an overall decline in sexual activity among teens (e.g., Lindbert et al., 2020). Evidence-based teen pregnancy prevention programs, youth-friendly reproductive health services, and parental and community support can continue to reduce teen pregnancy rates (Goodreau et al., 2020).

Sex Education

Sex education is an important tool not only in encouraging safe and healthy sexual behavior and choices but also in preventing STIs and unplanned pregnancies. In the United States, **abstinence-only education**, **abstinence-plus education**, and **comprehensive sex education** are the three main types of sex education programs:

- Abstinence-only education teaches that people should wait until marriage to engage in sexual intercourse and usually doesn't include information about using contraception or condoms to prevent pregnancy and STIs. This type of education also may not define what counts as sexual intercourse.
- Abstinence-plus education also promotes waiting until marriage to have sex but provides information about contraception and condoms.
- Comprehensive sex education gives accurate, age-appropriate information on topics like sexual development, behaviors (including abstinence), healthy relationships, life skills, communication, sexual orientation, and gender identity.

Current recommendations are to offer comprehensive sex education to adolescents in schools (Goldfarb & Lieberman, 2021). Several scientific, governmental, and non-profit organizations in the United States have been at the forefront of establishing the core features of a comprehensive sex education curriculum. The National Sexuality Education Standards, first released in 2012, included the following broad topics: healthy relationships, consent, anatomy and physiology, puberty and sexual development, gender identity, sexual orientation, sexual health, and interpersonal violence (Future of Sex Education Initiative, 2020).

How effective is such educational programming? A review of more than 1,500 published studies on all aspects of comprehensive sex education concludes this approach is a resounding success across multiple outcome measures (Goldfarb & Lieberman, 2021). The review highlights the importance of introducing such education as early in adolescence as possible, with some suggesting age-appropriate introduction as early as second or third grade (Lashof-Sullivan, 2015), carefully tailoring information to local needs and developmental appropriateness. Comprehensive sex education, in particular when it includes dating and communication content, has shown the following successful outcomes: reduced adolescent childbearing and STI transmission, improved prevention of and knowledge of dating violence, improved communication in romantic and dating relationships, greater appreciation of sexual diversity, reduced bullying of LGBTQ+ youth, reduced risk of sexual abuse, increased empathy and respect for others, improved positive self-image, a better sense of self-control and safety, increased gender awareness (knowledge and understanding of the concept of gender, the division of roles, and gender equality), and improved overall knowledge and socioemotional skills related to staying safe (Goldfarb & Lieberman, 2021). In short, it is an effective part of the conversation on adolescent sexuality.

Researchers recommend that comprehensive sex education be taught across multiple grades. Before puberty, children should be educated on their own anatomy at a very basic level (e.g., learning the accurate term for the overall external genitalia, such as vulva), know how to assert boundaries about their own boundaries (stay safe), and know how to communicate with a trusted adult if they are at risk or experience harm (Walsh et al., 2018). Additionally, as children approach puberty, in middle childhood and early adolescence, they should get more detail on healthy relationships and be taught in more detail about their own bodies and anatomy (e.g., being able to identify the parts of the external and internal genitalia). For example, multiple studies find that a minority of middle and high school youth can accurately identify the parts of the female and male reproductive system, and many do not have basic knowledge related to STIs and sex (Deshmukh & Chaniana, 2020; Nayoan et al., 2020). In a research study of older students, it was found that around two-thirds were still unable to identify female and male reproductive system parts including the labia and clitoris (Ampatzidis et al., 2019). Finally, by puberty, transparent and open comprehensive sex education that includes discussing of healthy and unhealthy relationships, defining sexual behavior fully, and teaching about safe sex should be provided to all students to improve their physical and socioemotional health and well-being (Goldfarb & Liberman, 2021).

Thinking back to your learning in Chapter 2 Genetic, Prenatal, and Perinatal Health, can you identify all the parts of the female and male reproductive systems (Figure 2.12)?

A related concept, **sex positivity** refers to individuals and communities that focus on openness, nonjudgmental attitudes, independence, and emancipation regarding sexuality and sexual expression (Donaghue, 2015). With a sex-positive approach, open discussions with parents and health-care providers can help educate teens about their sexual desires and behaviors (Kågesten et al., 2016). Having comprehensive sex education and knowledge of reproductive system parts can also increase long-term sexual health and well-being into adulthood (Dienberg et al., 2023).

Consent Culture and Sex Education

Consent culture refers to a societal framework that prioritizes and promotes mutual agreement, respect, and communication in all types of interpersonal interactions, particularly those of a sexual nature. In a consent culture, individuals are encouraged to seek and provide explicit and affirmative consent before engaging in any activity or behavior that may affect others. It emphasizes the understanding that consent must be freely given, reversible, informed, enthusiastic, and specific to each interaction. It aims to create an environment where all individuals feel empowered to assert their boundaries and where consent is valued as a fundamental aspect of healthy relationships and interactions. This shift toward advocating for affirmative consent, often known as "yes-means-yes" approaches, aims to foster open communication between partners and reduce instances of sexual assault (Im et al., 2021; Jozkowski, 2015). These approaches acknowledge affirmative consent as a clear and voluntary agreement, communicated either verbally or nonverbally, among all parties involved in sexual activity (Willis & Jozkowski, 2018).

A study of U.S. high school students found that adolescents' overall have favorable views toward affirmative consent (Javidi et al., 2021). The study also explored the correlations between attitudes toward affirmative consent and factors such as gender, beliefs about gender roles, and sexual activity status. Females and teens with more egalitarian views on gender roles exhibited more positive attitudes toward affirmative consent compared to males and those with less egalitarian views on gender roles (Javidi et al., 2021). These findings are consistent with previous research that noted college-aged women prefer a more explicit and affirmative consent process than college men (Muehlenhard et al., 2016). Favorable perceptions of affirmative consent could potentially contribute to a reduction in sexual assault incidents among youth by minimizing misunderstandings between partners, providing clarity on legal definitions of sexual misconduct, and fostering sexual interactions characterized by enthusiasm and mutual agreement.

LIFE HACKS

Sex-Positive Parenting Tips

Creating a sex-positive climate in the home is an important aspect of contemporary parenting (Saady, 2022). The statements, behaviors, and attitudes that make up this kind of parenting don't mean caregivers are encouraging their teenager to have sex. Rather, they recognize that sex and sexuality are a natural, healthy, and pleasurable part of life, and they set the stage for safe exploration, boundary setting, and open communication. Teaching about consent is a key part of this approach to sexuality.

Like those who adopt the authoritative parenting style, parents who approach their teen's emerging sexuality in a sex-positive way clearly communicate expectations for their teen regarding sexual behavior. When these expectations are not met, sex-positive parents communicate their disappointment and reinforce the agreed-upon parameters for future behavior. Shame and guilt are actively avoided.

Here are some other sex-positive parenting tips and practices:

- Use medically correct terms for sexual body parts and acts from early childhood onward.

- Discuss options for birth control and STI prevention.
- Discuss masturbation in healthy terms, including appropriate places to do it.
- Focus on the functionality of body parts rather than on their appearance.
- Model healthy sexuality with parents' own adult partners, including showing affectionate and romantic aspects of sex like hand-holding, kissing, and cuddling.
- Have periodic and ongoing age-appropriate discussions about sex, tailored to the teen's current knowledge and experiences.

In these ways, parents acknowledge adolescents' emerging sexuality and take an active part in setting their child up for positive decisions and experiences around sexuality.

References

Aghaee, S., Deardorff, J., Greenspan, L. C., Quesenberry, C. P., Jr, Kushi, L. H., & Kubo, A. (2020). Early life household intactness and timing of pubertal onset in girls: A prospective cohort study. *BMC Pediatrics, 20*(1), 464. https://doi.org/10.1186/s12887-020-02345-w

Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C. H., Perry, B. D., Dube, S. R., & Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience, 256*(3), 174–186. https://doi.org/10.1007/s00406-005-0624-4

Ampatzidis, G., Georgakopoulou, D., & Kapsi, G. (2019). Clitoris, the unknown: What do postgraduate students of educational sciences know about reproductive physiology and anatomy? *Journal of Biological Education, 55*(3), 254–263. https://doi.org/10.1080/00219266.2019.1679658

Anyanwu, F. C., Akinsola, H. A., Tugli, A. K., & Obisie-Nmehielle, N. (2020). A qualitative assessment of the influence of family dynamics on adolescents' sexual risk behaviour in a migration-affected community. *International Journal of Qualitative Studies on Health and Well-Being, 15*(1), 1717322. https://doi.org/10.1080/17482631.2020.1717322

American Psychological Association. (2024, July 8). *Transgender people, gender identity and gender expression*. Retrieved on March 15, 2024 from https://www.apa.org/topics/lgbtq/transgender-people-gender-identity-gender-expression

Arım, R. G., Tramonte, L., Shapka, J. D., Susan Dahinten, V., & Douglas Willms, J. (2011). The family antecedents and the subsequent outcomes of early puberty. *Journal of Youth and Adolescence, 40*(11), 1423–1435. https://doi.org/10.1007/s10964-011-9638-6

Bamishigbin, O. N., Jr., Schetter, C. D., & Stanton, A. L. (2019). The antecedents and consequences of adolescent fatherhood: A systematic review. *Social Science & Medicine, 232*, 106–119. https://doi.org/10.1016/j.socscimed.2019.04.031

Bleakley, A., Khurana, A., Hennessy, M., & Ellithorpe, M. (2018). How patterns of learning about sexual information among adolescents are related to sexual behaviors. *Perspectives on Sexual and Reproductive Health, 50*(1), 15–23. https://doi.org/10.1363/psrh.12053

Buhi, E. R. & Goodson, P. (2007). Predictors of adolescent sexual behavior and intention: A theory-guided systematic review. *Journal of Adolescent Health, 40*(1), 4–21. https://doi.org/10.1016/j.jadohealth.2006.09.027

Centers for Disease Control and Prevention. (2020, February 10). *Teen substance use & risks*. U.S. Department of Health and Human Services. https://www.cdc.gov/healthyyouth/factsheets/substance_use_fact_sheet-basic.htm

Centers for Disease Control and Prevention. (2023, July 7). *Sexually transmitted diseases (STDs): Diseases & related conditions*. U.S. Department of Health and Human Services. https://www.cdc.gov/std/general/default.htm

Deshmukh, D. D., & Chaniana, S. S. (2020). Knowledge about sexual and reproductive health in adolescent school-going children of 8th, 9th, and 10th standards. *Journal of psychosexual Health, 2*(1), 56–62. https://doi.org/10.1177/2631831819898916

Diaz, C. J. & Fiel, J. E. (2016). The effect(s) of teen pregnancy: Reconciling theory, methods, and findings. *Demography, 53*(1), 85–116. https://doi.org/10.1007/s13524-015-0446-6

Donaghue, C. (2015). *Sex outside the lines: Authentic sexuality in a sexually dysfunctional culture*. Benbella Books.

Dienberg, M. F., Oschatz, T., Kosman, E., & Klein, V. (2023). Does clitoral knowledge translate into orgasm? The interplay between clitoral knowledge, gendered sexual scripts, and orgasm experience. *Journal of Sex & Marital Therapy, 49*(5), 484–496. https://doi.org/10.1080/0092623X.2022.2147112

Fairchild, G., Hawes, D. J., Frick, P. J., Copeland, W. E., Odgers, C. L., Franke, B., Freitag, C. M., & De Brito, S. A. (2019). Conduct disorder. *Nature Reviews Disease Primers, 5*(1), 43. https://doi.org/10.1038/s41572-019-0095-y

Farello, G., Altieri, C., Cutini, M., Pozzobon, G., & Verrotti, A. (2019). Review of the literature on current changes in the timing of pubertal development and the incomplete forms of early puberty. *Frontiers in Pediatrics, 7*, 147. https://doi.org/10.3389/fped.2019.00147

Finer, L. B & Zolna, M. R. (2016). Declines in unintended pregnancy in the United States, 2008–2011. *New England Journal of Medicine, 374*(9), 843–852. https://doi.org/10.1056/NEJMsa1506575

Frankel, L. (2002). "I've never thought about it": Contradictions and taboos surrounding American males' experiences of first ejaculation (semenarche). *The Journal of Men's Studies, 11*(1), 37–54. https://doi.org/10.3149/jms.1101.37

Furlanetto, M. F., Ghedin, D. M., Gonçalves, T. R., & Marin, A. H. (2020). Individual and contextual factors associated with sexual initiation among adolescents. *Psicologia: Reflexão e Crítica, 32*(25). https://doi.org/10.1186/s41155-019-0138-z

Future of Sex Education Initiative (2020). *The future of sex education*. https://www.futureofsexed.org/

Gaydosh, L., Belsky, D. W., Domingue, B. W., Boardman, J. D., & Harris, K. M. (2018). Father absence and accelerated reproductive development in non-Hispanic white women in the United States. *Demography, 55*(4), 1245–1267. https://doi.org/10.1007/s13524-018-0696-1

Giletta, M., Choukas-Bradley, S., Maes, M., Linthicum, K. P., Card, N. A., & Prinstein, M. J. (2021). A meta-analysis of longitudinal peer influence effects in childhood and adolescence. *Psychological Bulletin, 147*(7), 719–747. https://doi.org/10.1037/bul0000329

Goldfarb, E. S. & Lieberman, L. D. (2021). Three decades of research: The case for comprehensive sex education. *Journal of Adolescent Health, 68*(1), 13–27. https://doi.org/10.1016/j.jadohealth.2020.07.036

Goodreau, S. M., Pollock, E. D., Wang, L., Li, J., Aslam, M. V., Katz, D. A., Hamilton, D. T., & Rosenberg, E. S. (2022). Declines in pregnancies among US adolescents from 2007 to 2017: Behavioral contributors to the trend. *Journal of Pediatric and Adolescent Gynecology, 35*(6), 676–684. https://doi.org/10.1016/j.jpag.2022.07.008

Gorry, D. (2019). Heterogeneous consequences of teenage childbearing. *Demography, 56*(6), 2147–2168.https://doi.org/10.1007/s13524-019-00830-1

Graber, J. A. (2013). Pubertal timing and the development of psychopathology in adolescence and beyond. *Hormones and Behavior, 64*(2), 262–269. https://doi.org/10.1016/j.yhbeh.2013.04.003

Hall, W. J., and Rodgers, G. K. (2019). Teachers' attitudes toward homosexuality and the lesbian, gay, bisexual, and queer community in the United States. *Social Psychology of Education, 22*, 23–41. https://doi.org/10.1007/s11218-018-9463-9

Harden, A., Brunton, G., Fletcher, A., Oakley, A., Burchett, H., & Backhans, M. (2006). *Young people, pregnancy and social exclusion: A systematic synthesis of research evidence to identify effective, appropriate and promising approaches for prevention and support*. EPPI-Centre.

Harding, J. F., Knab, J., Zief, S., Kelly, K., & McCallum, D. (2020). A systematic review of programs to promote aspects of teen parents' self-sufficiency: Supporting educational outcomes and healthy birth spacing. *Maternal and Child Health Journal, 24*, 84–104. https://doi.org/10.1007/s10995-019-02854-w

Harper, C. R., Steiner, R. J., Lowry, R., Hufstetler, S., & Dittus, P. J. (2018). Variability in condom use trends by sexual risk behaviors: Findings from the 2003–2015 National Youth Risk Behavior Surveys. *Sexually Transmitted Diseases, 45*(6), 400–405. https://doi.org/10.1097/OLQ.0000000000000763

Hoyt, L. T., Niu, L., Pachucki, M. C., & Chaku, N. (2020). Timing of puberty in boys and girls: Implications for population health. *SSM - Population Health, 10*, 100549. https://doi.org/10.1016/j.ssmph.2020.100549

Huang, C. Y., Costeines, J., Kaufman, J. S., & Ayala, C. (2014). Parenting stress, social support, and depression for ethnic minority adolescent mothers: Impact on child development. *Journal of Child and Family Studies, 23*, 255–262. https://doi.org/10.1007/s10826-013-9807-1

Im, J., Dimond, J., Berton, M., Lee, U., Mustelier, K., Ackerman, M. S., & Gilbert, E. (2021, May). Yes: Affirmative consent as a theoretical framework for understanding and imagining social platforms. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (pp. 1–18).

Javidi, H., Maheux, A. J., Widman, L., Kamke, K., Choukas-Bradley, S., & Peterson, Z. D. (2020). Understanding adolescents' attitudes toward affirmative consent. *Journal of Sex Research, 57*(9), 1100–1107. https://doi.org/10.1080/00224499.2019.1711009

Jozkowski, K. N. (2015). "Yes means yes"? Sexual consent policy and college students. *Change: The Magazine of Higher Learning, 47*(2), 16–23. https://doi.org/10.1080/00091383.2015.1004990
Kågesten, A., Gibbs, S., Blum, R. W., Moreau, C., Chandra-Mouli, V., Herbert, A., & Amin, A. (2016). Understanding factors that shape gender attitudes in early adolescence globally: A mixed-methods systematic review. *PloS One, 11*, 1–36. https://doi.org/10.1371/journal.pone.0157805
Kar, S. K., Choudhury, A., & Singh, A. P. (2015). Understanding normal development of adolescent sexuality: A bumpy ride. *Journal of Human Reproductive Sciences, 8*(2), 70–74. https://doi.org/10.4103/0974-1208.158594
Keenan, K., Culbert, K. M., Grimm, K. J., Hipwell, A. E., & Stepp, S. D. (2014). Timing and tempo: Exploring the complex association between pubertal development and depression in African American and European American girls. *Journal of Abnormal Psychology, 123*(4), 725–736. https://doi.org/10.1037/a0038003
Klopack, E. T., Simons, R. L., & Simons, L. G. (2020). Puberty and girls' delinquency: A test of competing models explaining the relationship between pubertal development and delinquent behavior. *Justice Quarterly, 37*(1), 25–52. https://doi.org/10.1080/07418825.2018.1472291
Klopack, E. T., Sutton, T. E., Simons, R. L., & Simons, L. G. (2020). Disentangling the effects of boys' pubertal timing: The importance of social context. *Journal of Youth and Adolescence, 49*(7), 1393–1405. https://doi.org/10.1007/s10964-019-01141-9
Lanari, D., Mangiavacchi, L., & Pasqualini, M. (2020). Adolescent sexual behaviour and academic performance of Italian students. *Genus, 76*(1), 1–18. https://doi.org/10.1186/s41118-020-00093-4
Landry, D. J., & Forrest, J. D. (1995). How old are U.S. fathers?. *Family Planning Perspectives*, 27(4), 159–165.
Lara, L. A., & Abdo, C. H. (2016). Age at time of initial sexual intercourse and health of adolescent girls. *Journal of Pediatric and Adolescent Gynecology, 29*(5), 417–423. https://doi/org/10.1016/j.jpag.2015.11.012
Lashof-Sullivan, M. (2015). Sex education in schools. *The Georgetown Journal of Gender and the Law, 16*, 263–264.
Leone, T., & Brown, L. J. (2020). Timing and determinants of age at menarche in low-income and middle-income countries. *BMJ Global Health, 5*(12), e003689. https://doi.org/10.1136/bmjgh-2020-003689
Lindberg, L. D., Scott, R. H., Desai, S., & Pleasure, Z. H. (2021). Comparability of estimates and trends in adolescent sexual and contraceptive behaviors from two national surveys: National Survey of Family Growth and the Youth Risk Behavior Survey. *Plos one, 16*(7), e0253262.
Lorber, M. F., & Egeland, B. (2009). Infancy parenting and externalizing psychopathology from childhood through adulthood: Developmental trends. *Developmental Psychology, 45*(4), 909–912. https://doi.org/10.1037/a0015675
Marshal, M. P., Dietz, L. J., Friedman, M. S., Stall, R., Smith , H. A., McGinley, J., Thoma, B. C., Murray, P. J., D'Augelli, A. R., Brent, D. A.. (2011). Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *Journal of Adolescent Health, 49*(2), 115–123. https://doi.org/10.1016/j.jadohealth.2011.02.005
Mercer, J. & Drew, M. (Eds.). (2021). Developmental changes in children and adolescents: Relevance for parental alienation discussions. In *Challenging parental alienation: New directions for professionals and parents*. Routledge.
Mollborn, S., & Morningstar, E. (2009). Investigating the relationship between teenage childbearing and psychological distress using longitudinal evidence. *Journal of Health and Social Behavior, 50*(3), 310–326. https://doi.org/10.1177/002214650905000305
Mrug, S., Elliott, M. N., Gilliland, M. J., Grunbaum, J. A., Tortolero, S. R., Cuccaro, P., Schuster, M. (2008). Positive parenting and early puberty in girls: Protective effects against aggressive behavior. *Archives of Pediatrics & Adolescent Medicine, 162*(8), 781–786. https://doi.org/10.1001/archpedi.162.8.781
Mrug, S., Elliott, M., Davies, S., Tortolero, S. R., Cuccaro, P., & Schuster, M. A. (2014). Early puberty, negative peer influence, and problem behaviors in adolescent girls. *Pediatrics, 133*(1), 7–14. https://doi.org/10.1542/peds.2013-0628
Muehlenhard, C. L., Humphreys, T. P., Jozkowski, K. N., & Peterson, Z. D. (2016). The complexities of sexual consent among college students: A conceptual and empirical review. *The Journal of Sex Research, 53*(4–5), 457–487. https://doi.org/10.1080/00224499.2016.1146651
Mustanski, B., Kuper, L., and Greene, G. J. (2014). "Development of sexual orientation and identity. In APA handbook of sexuality and psychology. In Tolman, D. L. & Diamond, L. M. (Eds.), *Person-Based Approaches*. Vol. 1. (pp. 597–628) American Psychological Association.
Najman, J. M., Hayatbakhsh, M. R., McGee, T. R., Bor, W., O'Callaghan, M. J., & Williams, G. M. (2009). The impact of puberty on aggression/delinquency: Adolescence to young adulthood. *Australian and New Zealand Journal of Criminology, 42*(3), 369–386. https://doi.org/10.1375/acri.42.3.369
National Institutes of Health. (2024). *Puberty and precocious puberty*. U.S. Department of Health and Human Services. https://www.nichd.nih.gov/health/topics/factsheets/puberty
Nayoan, C. R., Hoban, E., & Williams, J. (2020). How young female adolescents understand their pubertal body changes and reproductive system. *International Journal of Adolescence and Youth, 25*(1), 872–881. https://doi.org/10.1080/02673843.2020.1767662
Office of Population Affairs. (2023). *Trends in teen pregnancy and childbearing*. U.S. Department of Health and Human Services. https://opa.hhs.gov/adolescent-health/reproductive-health-and-teen-pregnancy/trends-teen-pregnancy-and-childbearing
Osinubi, A., Lewis-de Los Angeles, C. P., Poitevien, P., & Topor, L. S. (2022). Are black girls exhibiting puberty earlier? Examining implications of race-based guidelines. *Pediatrics, 150*(2), e2021055595. https://doi.org/10.1542/peds.2021-055595
Paschal, A. M. (2013). *Voices of African American teen fathers: I'm doing what I got to do*. Routledge.
Peragine, D. E., Skorska, M. N., Maxwell, J. A., Impett, E. A., & VanderLaan, D. P. (2022). The risks and benefits of being "early to bed": Toward a broader understanding of age at sexual debut and sexual health in adulthood. *The Journal of Sexual Medicine, 19*(9), 1343–1358. https://doi.org/10.1016/j.jsxm.2022.06.005
Peragine, D.E., Kim, J.J., Maxwell, J.A., Skorska, M. N., Impett, E. A., Cunningham, W. A., & VanderLaan, D. P. (2023). Not who you are, but who you are with: Re-examining women's less satisfying sexual debuts. *Archives of Sexual Behavior, 52*, 3405–3427. https://doi.org/10.1007/s10508-023-02667-7
Perper, K., Peterson, K., &, Manlove, J. (2010). *Diploma attainment among teen mothers. Child trends* [Fact Sheet Publication #2010–01]. https://cms.childtrends.org/wp-content/uploads/2010/01/child_trends-2010_01_22_FS_diplomaattainment.pdf
Price, M.N. & Hyde, J.S. (2009). When two isn't better than one: Predictors of early sexual activity in adolescence using a cumulative risk model. *Journal of Youth and Adolescence, 38*, 1059–1071. https://doi.org/10.1007/s10964-008-9351-2
Ragsdale, K., Bersamin, M. M., Schwartz, S. J., Zamboanga, B. L., Kerrick, M. R., & Grube, J. W. (2014). Development of sexual expectancies among adolescents: Contributions by parents, peers and the media. *The Journal of Sex Research, 51*(5), 551–560. https://doi.org/10.1080/00224499.2012.753025
Reis, L. F., Surkan, P. J., Atkins, K., Garcia-Cerde, R., Sanchez, Z. M. (2023). Risk factors for early sexual intercourse in adolescence: A systematic review of cohort studies. *Child Psychiatry & Human Development, 55*, 1–14. https://doi.org/10.1007/s10578-023-01519-8
Rosario, M., Corliss, H. L., Everett, B. G., Reisner, S. L., Austin, S. B., Buchting, F. O., & Birkett, M. (2014). Sexual orientation disparities in cancer-related risk behaviors of tobacco, alcohol, sexual behaviors, and diet and physical activity: Pooled Youth Risk Behavior Surveys. *American Journal of Public Health, 104*(2), 245–254. https://doi.org/10.2105/AJPH.2013.301506
Russell, S. T., & Fish, J. N. (2016). Mental health in lesbian, gay, bisexual, and transgender (LGBT) youth. *Annual Review of Clinical Psychology, 12*, 465–487. https://doi.org/10.1146/annurev-clinpsy-021815-093153
Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press. https://doi.org/10.1521/978.14625/28806
Saady, M. (2022, March 11). *Sex-positive parenting: What you need to know*. Parents Together. https://parents-together.org/sex-positive-parenting-what-you-need-to-know/
Saewyc, E. M. (2011). Research on adolescent sexual orientation: Development, health disparities, stigma, and resilience. *Journal of Research on Adolescence, 21*(1), 256–272. https://doi.org/10.1111/j.1532-7795.2010.00727.x
Salerno, J. P., Williams, N. D., &, Gattamorta, K. A. (2020). LGBTQ populations: Psychologically vulnerable communities in the COVID-19 pandemic. *Psychological Trauma: Theory, Research, Practice, Policy, 12*(S1), S239–S242. https://doi.org/10.1037/tra0000837
Sipsma, H., Biello, K. B., Cole-Lewis, H., & Kershaw, T. (2010). Like father, like son: The intergenerational cycle of adolescent fatherhood. *American Journal of Public Health, 100*(3), 517–524. https://doi.org/10.2105/AJPH.2009.177600
Somefun, O. D. (2019). Religiosity and sexual abstinence among Nigerian youths: Does parent religion matter? *BMC Public Health, 19*(416), 1–11. https://doi.org/10.1186/s12889-019-6732-2
Sommer, M., Likindikoki, S., & Kaaya, S. (2014). Tanzanian adolescent boys' transitions through puberty: The importance of context. *American Journal of Public Health, 104*(12), 2290–2297.
Song, W. & Qian, X. (2020). Adverse childhood experiences and teen sexual behaviors: The role of self-regulation and school-related factors. *Journal of School Health, 90*(11), 830–841. https://doi.org/10.1111/josh.12947
Sooki, Z., Shariati, M., Chaman, R., Khosravi, A., Effatpanah, M., & Keramat, A. (2016). The role of mother in informing girls about puberty: A meta-analysis study. *Nursing and Midwifery Studies, 5*(1), e30360. https://doi.org/10.17795/nmsjournal30360
Stephenson, R., Simon, C., & Finneran, C. (2014). Community factors shaping early age at first sex among adolescents in Burkina Faso, Ghana, Malawi, and Uganda. *Journal of Health, Population, and Nutrition, 32*(2), 161.
Strome, A., Waselewski, M., & Chang, T. (2022). Youths' knowledge and perceptions of health risks associated with unprotected oral sex. *The Annals of Family Medicine, 20*(1), 72–76. https://doi.org/10.1370/afm.2761
Torvik, F. A., Flatø, M., McAdams, T. A., Colman, I., Silventoinen, K., & Stoltenberg, C. (2021). Early puberty is associated with higher academic achievement in boys and girls and partially explains academic sex differences. *Journal of Adolescent Health, 69*(3), 503–510. https://doi.org/10.1016/j.jadohealth.2021.02.001
Thoma, B. C., Huebner, D. M., & Rullo, J. E. (2013). Unseen risks: HIV-related risk behaviors among ethnically diverse sexual minority adolescent females. *AIDS Education and Prevention, 25*(6), 535–541. https://doi.org/10.1521/aeap.2013.25.6.535
Scott R. H., Wellings K., & Lindberg L. (2020). Adolescent sexual activity, contraceptive use, and pregnancy in britain and the U.S.: A multidecade comparison. *Journal*

of Adolescent Health, 66(5), 582–588. https://doi.org/10.1016/j.jadohealth.2019.11.310
Walsh, K., Zwi, K., Woolfenden, S., & Shlonsky, A. (2018). School-based education programs for the prevention of child sexual abuse: A Cochrane systematic review and meta-analysis. *Research on Social Work Practice, 28*(1), 33–55. https://doi.org/10.1177/1049731515619705
Warner, J. (2017, November 17). *The unequal toll of toxic stress*. The Center for American Progress. https://www.americanprogress.org/article/unequal-toll-toxic-stress/
Wheeler, S. B. (2010). Effects of self-esteem and academic performance on adolescent decision-making: An examination of early sexual intercourse and illegal substance use. *Journal of Adolescent Health, 47*(6), 582–590. https://doi.org/10.1016/j.jadohealth.2010.04.009
Willis, M., & Jozkowski, K. N. (2018). Barriers to the success of affirmative consent initiatives: An application of the social ecological model. *American Journal of Sexuality Education, 13*(3), 324–336. https://doi.org/10.1080/15546128.2018.1443300
Wolfe, J. D., Thomeer, M. B., & Reczek, R. (2023). Age at first birth and women's midlife health: Cohort and race differences across the 20th century. *Social Science & Medicine, 331*, 116097. https://doi.org/10.1016/j.socscimed.2023.116097

9.3 Cognition in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the formal operational stage of cognitive development in adolescence
- Describe the information processing perspective on cognitive development in adolescence
- Explain influences that promote or inhibit cognitive development in adolescence

Anna is a seventeen-year-old student in twelfth grade in a public school. They recently sought counseling because they were having trouble dealing with the stress of senior year. Coming from a culture that places great importance on academic success, Anna faces intense parental pressure to achieve high grades and attend college. Anna does not want to let them down but is constantly feeling exhausted and anxious. They feel like they overthink everything they do, and after every interaction, Anna wonders how people might have perceived them or thought of their behavior, which gets tiring and stressful. This has led Anna to avoid social interactions with others as much as possible. What can Anna do to overcome unwanted thoughts and deal with academic stress?

Psychologists studying these types of development look to cognitive functioning and growth to understand the changes that occur to the brain during adolescence. Metaphorically, you might consider the brain as "hardware" and cognition as "software," or perhaps a collection of apps with an operating system. During adolescence, there are many changes in the developing capabilities of the teen's new "operating system." These changes help us understand what is going on in Anna's brain functioning that might be triggering anxiety around exams and their self-judgment during peer-to-peer social interactions.

Formal Operational Stage of Cognitive Development

Recalling Jean Piaget's stages of cognitive development, adolescence is the period when individuals reach the final stage of **formal operations**. The term "formal" signifies that the adolescent has achieved the capability to reason using formal logical systems and symbols. In a larger sense, Piaget considered cognitive development complete during adolescence: the adolescent has achieved formal adult thinking capabilities.

One way to understand the key developments in adolescent cognition is to connect them to the concept of possibilities. Adolescents are able think about all the possibilities in a situation beforehand and then test them systematically (Crain, 2005). In contrast, while younger children can think in rather complex and logical ways, they are limited to reasoning about concrete, physical situations. Adolescents, in addition to increasing the complexity of their reasoning, gain the ability to think about all aspects of a situation, even a situation that doesn't or can't exist. For example, high school history teachers might ask their students to imagine they could go back in time to change just one event and write about the consequences. A school-aged child would struggle with this assignment and might indicate that time-travel isn't possible or provide an example but discuss only immediate consequences, whereas a teenager would be able to think through the scenario and provide more nuanced ramifications for the historical change. For example, the school-aged child might focus on President Abraham Lincoln still being alive if he wasn't assassinated, whereas a high-school student might develop additional policies that Lincoln could have enacted based on his political leanings, if he were able to remain alive and in power. Two major achievements of adolescent cognition are the ability to think about what is possible and to apply formal logic and reason.

Individuals derive many cognitive skills and developments from the ability to think about what might be

possible. For example, people use **hypothetical reasoning** to predict what might occur given a set of circumstances: If a storm cloud is present and the air feels humid, it may rain soon. People use **deductive reasoning** to test propositions in a logical and orderly way. For example, let's say a student believes that when people study together, they will do better in a class. Adolescents can test this belief by looking at the outcome of their next exam and comparing their performance before they attended the study group session and after. They are also capable of thinking about why the group session may have helped them, including potential ways they may have studied differently during the group session and how they might extend those study strategies to the next time they try to study on their own. Not only do adolescents gain the ability to think about all the possibilities and angles of a particular problem, but they achieve the mindset to systematically explore and test each one.

Among many other things, Piaget is also credited with developing a unique style of interviewing for testing aspects of his theory in children (Pramling, 2006; Sommer-Flanagan et al., 2015). Specifically in these structured interviews, researchers would pose a problem or scenario, and the child would have to solve it while verbalizing the logic behind their answers. The researcher would ask follow-up questions based on the child's responses to further delve into the child's logical reasoning. Piaget devised several scenarios to test aspects of his theory. One example is the pendulum problem he devised to test deductive reasoning. The problem asks which of four variables makes a pendulum swing faster: (1) the length of the string, (2) the height from which the weight on the string is dropped, (3) the amount of weight, or (4) the force of the initial push. What's important to psychological research is not the participant having the correct answer, but how the participant goes about discovering it. While a younger child in the concrete operational stage (seven to eleven years old) might try out several different solutions seemingly at random and quickly come up with an answer, correct or not, an adolescent will be more likely to methodically plan and test many possible combinations of the four variables, having thought ahead about how to do so and how the four options might interact with one another.

Piaget's Deductive Reasoning Pendulum Test

Which makes the pendulum swing faster?

- The length of the string
- The height from which the weight on the string is dropped
- The amount of weight
- The force of the initial push

The adolescent participant's method of answering the questions identifies their level of operational thinking.

FIGURE 9.9 The pendulum task is used to identify a formal operational thinker, who is able to think logically even when dealing with abstract concepts or hypothetical situations. (credit left: modification of work "Foucault Pendulum" by Stephen Rahn/Flickr, Public Domain; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

This planning and testing of options is a hallmark of **scientific thinking**—thinking that involves the systematic testing of possibilities to learn more about a topic. Scientific thinking also relies on the adolescent's ability to reason using **propositional logic**—the ability to come to a conclusion based on imagining the proposed situation rather than observing an actual scenario. For example, teenagers, along with their recently conquered decentration from the previous concrete operational stage, are capable of simultaneously thinking about and combining different facets/variables about a problem in their mind, as they contemplate and evaluate the outcomes of each possibility (Roberge & Flexer, 1979), making them even better scientists. Taken together, these cognitive capabilities allow adolescents to discover complex relations and truths about the

world.

Multidimensional Facets of Adolescent Thinking

Adolescent thought is characterized by several other tendencies that stem from teens' new ability to think about what is possible. First is the ability to think in complex ways about abstract ideas. Adolescents become aware of the world of ideas that don't necessarily exist in physical form, and concepts, like justice, equality, equity, and truth take on new and profound importance. A child in the concrete operations stage might be able to talk about respect in simple terms, such as the give and take of mutual benefits (i.e., respect is when you are kind and share your things (Malti et al., 2020). An adolescent's description would be much more nuanced and might include a discussion of equality and fairness (another abstract yet real concept).

Adolescents are also able to think about multiple dimensions of a problem or situation and the way various factors combine to influence an observed outcome. For example, when faced with a dress code violation at school, a high school student might be able to see how the policy creates a standard against which all students are held, while also arguing against the lost class time that being sent home to change entails. Seeing the irony of such a situation is a hallmark of adolescent thinking and may lead to frustration and de-idealization of the adults who control their world. An appreciation of sarcasm, which relies on the ability to think in multiple dimensions and from multiple perspectives, also emerges in adolescence (Glenwright et al., 2017). Not only can adolescents begin to understand when sarcasm is being used, but they can begin to understand its functional use in public discourse. Questioning rules, especially rules that seem arbitrary, is another hallmark of the adolescent experience.

Because they can now think about possibilities, in both abstract ways and in multiple dimensions, adolescents also develop **relativistic thinking**, which is the belief that most truths and statements of fact are relative to the position of the observer (Chandler et al., 1990). Prior to this stage, children tend to think in absolutes (e.g., right versus wrong; good versus bad). Adolescents who have developed more relativistic thinking can simultaneously evaluate the possibility that both positions can exist, depending on whose perspective you are taking. For example, if two friends are discussing whose answer on a test was correct, a teenager would be able to see how both friends could be right given the context of their examples in the answer. They could then use this information to discuss with their instructor how to gain a better understanding of the material. When all things are possible and all perspectives can be considered, everyone can seem correct . . . and everyone can seem wrong. It's a matter of perspective.

INTERSECTIONS AND CONTEXTS

Adolescent Idealism and Changing the World

Where does idealism come from? The perspective of Piaget's theory of cognitive development provides several relevant themes that combine to give adolescence this distinct characteristic. The new ability to think about possibilities opens the door for idealism to emerge in adolescence, as well as the ability to think logically about complex abstract concepts, even going so far as to test out hypotheses in one's head. Adolescent theorist David Elkind was pivotal in exploring the consequences of these combined abilities (Elkind, 1998; Tyler, 2020). He noted that as adolescents grow in their analytical capabilities, it's natural for them to become critical of the world around them. For example, teens may notice their parents exceeding the speed limit, a teacher with alcohol on his breath, or a police officer on her cell phone while driving. And turning on the TV or scanning social media shows a world that includes serious issues like hunger, war, homelessness, and political unrest.

Adolescents react to this perception of disorder and hypocrisy in a predictable way, according to Elkind (1967, 1978). Remember that adolescents are growing into adulthood, and the desire to take on adult responsibilities and roles adds to their determination to see the wrongs in the world and to do better. A search for solutions often becomes personal and emotionally charged. The not-quite-adult individual has the capacity to imagine a better

world and wants to take immediate action.

Teachers, health-care professionals, and other adult mentors may provide opportunities for teens to explore the constructive power of idealism. Joining advocacy clubs at school, getting involved in community projects, and arguing with adults are all part of this newfound sense of what's possible and what can be made right. Rather than seeing adolescents' argumentativeness and passion as "acting out," adults can recognize that their idealism—and the accompanying de-idealization of parents and other authority figures—is a normative part of the transition to adulthood, and they can work with adolescents to help them channel their interests and energy. For example, a parent might identify that when their teen argues with them, their teen is showing deep concern about issues of environmental sustainability. The parent might identify a local arbor club or relevant non-profit that the teen could get involved with so that they could foster their interests and enact positive change in their community.

In **adolescent egocentrism**, an adolescent has the tendency to believe that other people—sometimes called an **imaginary audience**—are as preoccupied with the teen's appearance, body, and behavior as they are (Elkind, 1967). Teens may feel that everyone is watching them and have a strong need to impress others, though usually their peers are also consumed by what others think of them and don't necessarily worry about what they think about others. According to Elkind, another aspect of adolescent egocentrism is the **personal fable**. That is, teenagers often believe they and their feelings are unique, and that no one else can feel suffering with such intensity (Elkind, 1967). Another feature of adolescent egocentrism is the **invincibility fable**, the adolescent belief that they cannot be harmed or defeated. Preoccupation with the personal fable and concerns about pleasing the imaginary audience likely peak around age fifteen years, along with self-consciousness in general.

For examples of the features of adolescent egocentrism, consider the scenario of Sage. Sage is a teenager who just had a dramatic breakup with his first romantic partner. Sage is recounting to his father, Justin, his immense heartbreak and self-doubt. Justin tries to comfort his son by saying that the wound will heal in time. Sage snaps back, "You can't possibly understand what I'm feeling!" (personal fable). The next day, Sage walks into school and sees two of his classmates whisper something to each other. Sage confronts them about how they should mind their own business about the breakup only to be embarrassed to find out that his peers were talking about something completely different (imaginary audience). A week or two later, as Sage is trying to find new things to do with his free time, he gets the clever idea to become an influencer by doing more and more daring skate tricks confident that no harm will befall him (invincibility fable).

Social media can reinforce teens' belief that they are unique (Houlihan, 2014). Online bullying is an apt example, given that adolescents feel they are invulnerable to the negative outcomes of their actions (Houlihan, 2014). Interestingly, this digital environment makes the "imaginary audience" of their life feel more real, increasing the likelihood of engaging in risky behavior, such as sharing one's location on the internet (Cingel et al., 2015). These behaviors might open them up to further negative outcomes that they hadn't predicted.

While Piaget's theory of cognitive development offered a comprehensive accounting of children's cognitive skills at various ages and explained how those skills develop, some aspects of this theory and its research have limitations. First, recall that Piaget's theory of cognitive development is a stage theory. This means that children learn specific cognitive skills at different ages that map directly or indirectly to their brain maturation, such as the ability to focus on more than one aspect of a problem and a maturing frontal cortex. It turns out, however, that development doesn't occur in a stepwise fashion implied by the term "stage theory." The stage model also assumes that all individuals reach the same level of cognitive development at the same time, which we know isn't true. Rather, cognitive abilities and mature thinking can occur in a continuous fashion, given proper guidance and scaffolding from others (e.g., formal schooling, peer interactions, adult caregivers). Moreover, Piaget's focus on the role of nature and the brain's physical maturation led to an

underestimation of the significant roles that culture and social interaction and experience play in cognitive development (Franzoi, 2011; Lourenço, 2016). This connects with Lev Vygotsky's research suggesting that children's cognitive development occurs within a sociocultural environment and that cultural tools like language and counting systems have a significant influence on cognitive growth (Bernstein et al., 2008).

Second, Piaget's research relied on an interview style that often heavily used children's verbal descriptions of their thought processes (Ginsburg & Opper, 1988; Müller et al., 2009). This may work well for children who have a well-developed vocabulary and insight into their own thinking, but a child who lacks these skills may not be able to explain their actual understanding, and the Piagetian approach may mistakenly claim the child doesn't understand the concept in question. The research technique was also prone to focus on what children of various ages were incapable of doing or simply got wrong. Later researchers have criticized the tendency to equate task performance with competency in Piaget's initial studies (Lourenço, 2016). Ultimately, each research method be it interviewing the adolescent, surveying the adolescent, or interviewing teachers or caregivers, has various advantages and disadvantages. By combining various research techniques, we can form a more complete picture. The advantage to Piaget's technique stands: hearing the adolescent's perspective and thinking.

A final criticism of Piaget's foundational research into children's cognitive development is the view of formal operations and scientific thinking as a complete and fully attained state, the end-state for human cognitive development, which reflects the bias of historically WEIRD research in the discipline of lifespan development (1.4 Contexts and Settings of Development). Some societies and cultures have different perspectives on the ultimate goals of cognition, including a focus on artistic expression, wisdom represented in folklore, or practical success in everyday life (Lourenço, 2016; Martin et al., 2010). In some cultures, educational institutions don't emphasize critical thinking, which is needed to reach Piaget's formal operational stage. As a result, only about half of the people in these societies achieve this level of thinking skills (Bernstein et al., 2008). Additionally, some biological psychologists suggest that teenagers worldwide cannot handle complex calculations effectively until the age of twenty years because their brain activity is still developing (Cacioppo & Freyberg, 2013).

Information Processing Perspective on Cognitive Development

The information processing perspective on cognitive development retains several features of Piaget's theory while adding a more contemporary focus on the biological supports for various thinking abilities or **cognitive domains**. These domains include processing and perceptual speed, metacognition, and other cognitive abilities such as reasoning and decision-making.

Adolescent brain growth and maturation lead to rapid increases in abilities across all the cognitive domains. Most of these increases continue into early adulthood before leveling off. One notable exception is **perceptual speed**, the ability to quickly recognize objects and other symbols, which peaks in late adolescence and then declines throughout the rest of life (Kail & Ferrer, 2007; Schaie, 1994). For example, a person in this age group would be faster and more accurate than their parent at finding and identifying hidden items in a picture. This enhanced perceptual speed has been shown to be associated with greater job performance (Mount et al., 2008), as well as school performance via increased creativity and intelligence (Rindermann & Neubauer, 2004). Specifically, when a person can quickly process and identify items in their surroundings, they tend to also be more creative and intelligent, which directly impacts their performance in school.

Metacognition, the ability to think about thinking, is another rapidly developing feature of adolescent thought that plateaus in adulthood and is a critical skill for complex problem-solving (Weil et al., 2013). Using metacognition, individuals can take a moment to pause and form a plan for approaching a problem, selectively choosing the strategy that might work, and monitoring progress toward a solution. They can also decide how much to rely on their own decisions and learning or the advice and learning of others (Paulus et al., 2013). For example, an adolescent's ability to determine whether they will remember something at a later time is greatly improved, as well as the ability to predict someone else's learning and memory of the material, especially if

they've tried learning the same material already. The adolescent's growing awareness and regulation of their own cognitive abilities and understanding of others' thinking makes for a nearly mature thinker who begins to rely less on others' input.

How often do adolescents use these capabilities in everyday life? A study noted that teens aim for greater autonomy in decision-making and can harness their emerging abilities to reject misleading advice but accept helpful guidance from others (Moses-Payne et al., 2021). In other words, adolescents are better able to decide whether someone else's advice is worth following and, in turn, become more confident in their own decision-making. Furthermore, contrary to the popular stereotype of impulsive teenagers needlessly acting reckless, adolescents become better (reasoned) risk-takers due to their improved executive function rather than reactive risk-takers (Maslowsky et al., 2019; Romer et al., 2017).

Reasoned risk-taking involves careful planning and strategy, depending on improved cognitive control and a strong inclination for exploring new experiences, whereas teenagers are often stereotyped as impulsive and opportunistic risk-takers engaging in maladaptive behaviors due to a developmental deficit (Maslowsky et al., 2019). While both types of risk-taking occurs, researchers found that teenagers who engaged in more reasoned risk-taking also self-reported higher levels of sensation-seeking behaviors, better working memory, and a more positive focus on future planning (Maslowsky et al., 2019). These results show that teenagers, while more likely to engage in risky behaviors, are actually quite strategic in which risks they take.

Overall, as we consider the adolescent from the information processing perspective, we encounter individuals who are increasingly advanced across many cognitive domains, together with an ever more sophisticated ability to reason effectively using those skills. By and large, by the end of adolescence, a highly capable individual with the ability to think abstractly about multiple facets of a problem from multiple perspectives while contemplating the consequences of each aspect has emerged.

LINK TO LEARNING

Adriana Galván reveals the neurobiology behind typical teenage behaviors like risk-taking, exploration and thrill-seeking. Watch the video "Insight into the Teenage Brain" from TEDxYouth@Caltech (https://openstax.org/r/104TeenBrain) to gain insights into the opportunities and vulnerabilities associated with the teen brain and behavior development, which can help shape policies, juvenile justice, and public health concerns that impact young people.

Contextual Influences on Cognitive Development

Both Piaget's theory and the information processing perspective are fueled by a feedback loop between the individual's maturing brain and the environmental inputs and supports for the brain's further growth and development. An example is the U.S. school curricula across grade levels. The preschool curriculum takes advantage of the playful mindset of the preoperational child, while high school curricula leverage adolescents' newfound abilities and appreciation for complex problem-solving, introducing abstract concepts. This back-and-forth interaction between the individual and the environment is an example of contexts that influence cognitive development in adolescents. These contexts include family and home environment, culture and language, and formal schooling (Figure 9.10). In cultures that don't emphasize the development of scientific reasoning, Piaget's stage of formal operations may not be reached, and the features associated with adolescent thought might not be readily observed (Cole, 2006; Nur et al., 2020).

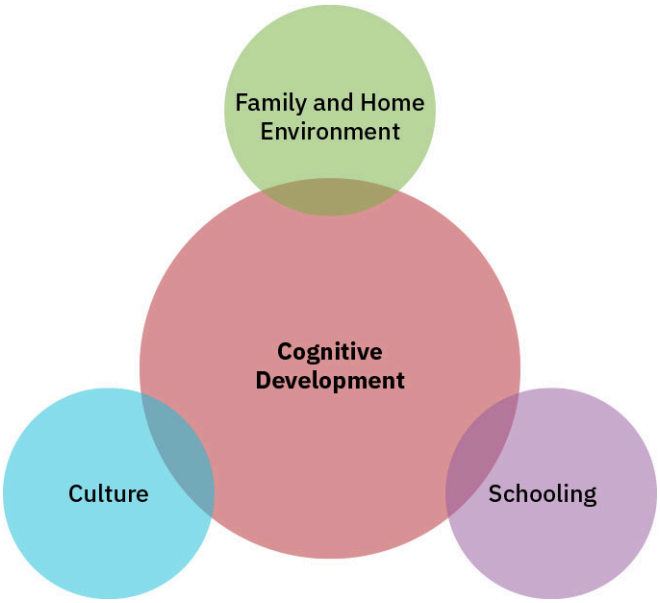


FIGURE 9.10 Cognitive development in adolescence is influenced by an interplay of family and home environment, culture, and formal schooling contexts. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Considering family dynamics and the home environment, the authoritative parenting style shows the most benefit for school performance and engagement if the development of formal operations is considered a goal of cognitive development (Steinberg et al., 1992). Authoritative parents set high expectations with high levels of warmth and nurturing. They explain the reasoning behind rules and encourage children to extract general principles from experiences and explore within boundaries. These parent–child interactions reinforce the reasoning fostered in formal schooling. Another way the family and home environment support cognitive development is by providing learning resources and opportunities for practice and exploration. Family activities such as games, reading, entertainment, and travel all offer opportunities to learn about the world and practice that understanding (Greenfield, 2014; Wu et al., 2021). There are clear socioeconomic differences in the amount and types of learning-relevant resources available in homes. Whereas clear socioeconomic differences in the amount and types of learning-relevant resources that are available in homes exist, caregivers can still foster cognitive development by providing a supportive environment and accessing community-based resources. However, that can still be resource demanding when families are struggling with limited access to resources.

A growing body of scientific literature shows that cultural factors can impact, at least partially, cognition and cognitive development (Kitayama & Uskul, 2011). For example, researchers have shown that some cultural differences, such as what a culture tends to emphasize in an environment, can influence our memory for that environment (Masuda & Nisbett, 2001). Specifically, the researchers suggest that individuals from East Asian cultures, including Japan, tended to interact with their environment in a more holistic or relational (big picture) way, whereas Westerners, including Americans, tended to focus heavily on objects in the environment and detach them from the surrounding context. When asked to remember items on a memory task, Japanese participants tended to do better than American participants when the background of the image matched the originally presented image, highlighting that the Japanese participants emphasized and encoded the item along with the background context. On the other hand, American participants tended to do better than Japanese participants when the item was presented with no background or a novel background, highlighting that the American participants were able to encode the item detached from the background. These results show how differences in cultural practices and perception could have an impact on cognitive processes.

Through the structure of language, culture can also support and propel learning and cognitive development.

For example, in Chinese languages, fractions are represented simply as parts of a whole, so ¼ is said as "one out of four" instead of "one-fourth" (Xin & Liu, 2015). This simplicity and uniformity make learning and manipulating fractions easier and may contribute to observed cross-cultural differences in mathematics performance.

To the extent that a culture, or even an individual home environment, emphasizes the cognitive manipulation of visual symbols, such as icons, emojis, and other visual symbol systems, it is providing everyday practice for tests of fluid intelligence. Think for a moment how visual our current world is—people are constantly tapping, touching, or swiping various icons and symbols on screens, often with different fonts and abbreviations. This highly visual, nonverbal environment supports the development of our spatial and perceptual processing skills (Blazhenkova & Kozhevnikov, 2010; Williams, 1998). Our frequent interaction with icons and symbols in our digital world might be helping us develop the kind of thinking skills measured in fluid intelligence tests, which suggests a connection between technology and how our brains develop. Ultimately, the adolescent mind is a fascinating culmination of biological and contextual factors that, with experience and motivation, can notice, process, and interact with their environment in a multi-dimensional and less concrete way.

References

Bernstein, D. A., Clarke-Stewart, A., & Roy, E. J. (2008). *Psychology*. Houghton Mifflin.

Blazhenkova, O., & Kozhevnikov, M. (2010). Visual-object ability: A new dimension of non-verbal intelligence. *Cognition, 117*(3), 276–301. https://doi.org/10.1016/j.cognition.2010.08.021

Cacioppo, J. T., & Freberg, L. A. (2013). *Discovering psychology: The science of mind*. Wadsworth.

Chandler, M., Boyes, M., & Ball, L. (1990). Relativism and stations of epistemic doubt. *Journal of Experimental Child Psychology, 50*(3), 370–395. https://doi.org/10.1016/0022-0965(90)90076-K

Cingel, D. P., Krcmar, M., & Olsen, M. K. (2015). Exploring predictors and consequences of personal fable ideation on Facebook. *Computers in Human Behavior, 48*, 28–35. https://doi.org/10.1016/j.chb.2015.01.017

Cole, M. (2006). Culture and cognitive development in phylogenetic, historical, and ontogenetic perspective. In D. Kuhn, R. S. Siegler, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Cognition, perception, and language* (6th ed., pp. 636–683). John Wiley & Sons, Inc.

Crain, W. (2005). *Theories of development concepts and applications* (5th ed.). Pearson.

Elkind, D. (1967). Egocentrism in adolescence. *Child Development, 38*(4), 1025–1034. https://doi.org/10.2307/1127100

Elkind, D. (1978). Understanding the young adolescent. *Adolescence, 13*(49), 127–134.

Elkind, D. (1998). *All grown up and no place to go: Teenagers in crisis*. Addison-Wesley.

Franzoi, S. L. (2011). *Psychology a discovery experience*. USA: South-Western.

Ginsberg, H.P. and Opper, S. (1988) *Piaget's theory of intellectual development*. (3rd ed.). Prentice-Hall.

Glenwright, M., Tapley, B., Rano, J. K., & Pexman, P. M. (2017). Developing appreciation for sarcasm and sarcastic gossip: It depends on perspective. *Journal of Speech, Language, and Hearing Research, 60*(11), 3295–3309. https://doi.org/10.1044/2017_JSLHR-L-17-0058

Greenfield, P. (2014). *Mind and media: The effects of television, video games and computers*. Psychology Press.

Houlihan, D. (2014). Adolescents and the social media: The coming storm. *Journal of Child and Adolescent Behaviour, 2*(2). https://doi.org/10.4172/jcalb.1000e105

Kail, R. V., & Ferrer, E. (2007). Processing speed in childhood and adolescence: Longitudinal models for examining developmental change. *Child Development, 78*(6), 1760–1770. https://doi.org/10.1111/j.1467-8624.2007.01088.x

Kitayama, S. & Uskul, A. K. (2011). Culture, mind, and the brain: Current evidence and future directions. *Annual Review of Psychology, 62*, 419–449. https://doi.org/10.1146/annurev-psych-120709–145357

Lourenço, O. M. (2016). Developmental stages, Piagetian stages in particular: A critical review. *New Ideas in Psychology, 40*, 123–137. https://doi.org/10.1016/j.newideapsych.2015.08.002

Malti, T., Peplak, J., & Zhang, L. (2020). The development of respect in children and adolescents. *Monographs of the Society for Research in Child Development, 85*(3). https://doi.org/10.1111/mono.12417

Martin, G. N., Carlson, N. R., & Buskist, W. (2010). *Psychology*. Pearson.

Maslowsky, J., Owotomo, O., Huntley, E. D., & Keating, D. (2019). Adolescent risk behavior: Differentiating reasoned and reactive risk-taking. *Journal of Youth and Adolescence, 48*(2), 243–255. https://doi.org/10.1007/s10964-018-0978-3

Masuda, T., & Nisbett, R. E. (2001). Attending holistically versus analytically: Comparing the context sensitivity of Japanese and Americans. *Journal of Personality and Social Psychology, 81*(5), 922–934. https://doi.org/10.1037/0022-3514.81.5.922

Moses-Payne, M. E., Habicht, J., Bowler, A., Steinbeis, N., & Hauser, T. U. (2021). I know better! Emerging metacognition allows adolescents to ignore false advice. *Developmental Science, 24*(5), e13101. https://doi.org/10.1111/desc.13101

Mount, M. K., Oh, I. S., & Burns, M. (2008). Incremental validity of perceptual speed and accuracy over general mental ability. *Personnel Psychology, 61*(1), 113–139. https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1744-6570.2008.00107.x

Müller, U., Carpendale, J. I., & Smith, L. (Eds.). (2009). *The Cambridge companion to Piaget*. Cambridge University Press.

Nur, A. S., Waluya, S. B., Rochmad, R., & Wardono, W. (2020). Contextual learning with ethnomathematics in enhancing the problem solving based on thinking levels. *Journal of Research and Advances in Mathematics Education, 5*(3), 331–344.

Paulus, M., Tsalas, N., Proust, J., & Sodian, B. (2014). Metacognitive monitoring of oneself and others: Developmental changes during childhood and adolescence. *Journal of Experimental Child Psychology, 122*, 153–165. https://doi.org/10.1016/j.jecp.2013.12.011

Pramling, N. (2006). 'The clouds are alive because they fly in the air as if they were birds': A re-analysis of what children say and mean in clinical interviews in the work of Jean Piaget. *European Journal of Psychology of Education, 21*(4), 453–466. https://doi.org/10.1007/BF03173514

Rindermann, H., & Neubauer, A. C. (2004). Processing speed, intelligence, creativity, and school performance: Testing of causal hypotheses using structural equation models. *Intelligence, 32*(6), 573–589. https://doi.org/10.1016/j.intell.2004.06.005

Roberge, J. J., & Flexer, B. K. (1979). Further examination of formal operational reasoning abilities. *Child Development, 50*(2), 478–484. https://doi.org/10.2307/1129426

Romer, D., Reyna, V. F., & Satterthwaite, T. D. (2017). Beyond stereotypes of adolescent risk taking: Placing the adolescent brain in developmental context. *Developmental Cognitive Neuroscience*, 27, 19–34. https://doi.org/10.1016/j.dcn.2017.07.007

Schaie, K. W. (1994). The course of adult intellectual development. *American Psychologist, 49*(4), 304–313. https://doi.org/10.1037/0003-066X.49.4.304

Sommers-Flanagan, J., Zeleke, W. A., & Hood, M. E. (2015). The clinical interview. In *The encyclopedia of clinical psychology* (pp. 1–9). John Wiley & Sons, Inc.

Steinberg, L., Lamborn, S. D., Dornbusch, S. M., &, Darling, N. Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. Child Development, 63(5), 1266–1281. https://doi.org/10.2307/1131532

Tyler, S. (2020). Cognitive development in adolescence. In *Human behavior and the social environment*. University of Arkansas Libraries.

Weil, L. G., Fleming, S. M., Dumontheil, I., Kilford, E. J., Weil, R. S., Rees, G., Dolan, R. J., & Blakemore, S. J. (2013). The development of metacognitive ability in adolescence. *Consciousness and Cognition, 22*(1), 264–271. https://doi.org/10.1016/j.concog.2013.01.004

Williams, W. M. (1998). Are we raising smarter children today? School- and home-related influences on IQ. In U. Neisser (Ed.), *The rising curve: Long-term gains in IQ and related measures* (pp. 125–154). American Psychological Association.

Wong, B. I., Yin, S., Yang, L., Li, J., & Spaniol, J. (2018). Cultural differences in memory for objects and backgrounds in pictures. *Journal of Cross-Cultural Psychology, 49*(3), 404–417. https://doi.org/10.1177/0022022117748763

Wu, W., Kirillova, K., & Lehto, X. (2021). Learning in family travel: What, how, and from whom? *Journal of Travel & Tourism Marketing, 38*(1), 44–57. https://doi.org/10.1080/10548408.2020.1862025

Xin, Z. & Liu, X. (2015). Chinese children's understanding of the fraction concept. In B. Sriraman, J. Cai, K-H. Lee, L. Fan, Y. Shimuzu, C. S. Lim, K. Subramanium (Eds.), *The first sourcebook on Asian research in mathematics education: China, Korea, Singapore, Japan, Malaysia and India* (pp. 515–540). Information Age Publishing.

9.4 Decision-Making and Risky Behaviors in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the brain regions that govern adolescent risk perception and reward-seeking behaviors
- Describe adolescents' decision-making in comparison to adults' decision-making
- Describe the prevalence and types of common risky behaviors in adolescence

Kesavan is a sixteen-year-old high school sophomore, and he's feeling a new sense of optimism about his social life. It's Friday night, and he's excited to make the most of his extended curfew, which is now until 11 p.m. When his parents ask about his plans, Kesavan says he's planning to see the latest action film with some friends and maybe hang out at the fast food place around the corner. In reality, his friends will pick him up, and they will attend a keg party thrown by high school seniors. Kesavan doesn't think he'll drink at the party, but if he does, he'll need some breath mints before heading home. He's also hoping that the party is not busted by the cops and that no one drinks and drives.

Kesavan is making a set of decisions that could have lasting effects on his health, safety, legal record, family relationships, and social standing. He weighs the pros and cons of different options, considering both the social and emotional aspects of the situation, like the excitement and nervousness of being at a keg party. Adolescent decision-making is complex, largely driven by emotions and pleasure-seeking behaviors, and often lacks a clear assessment of consequences.

Decision-Making, Risk-Taking, and Rewards

As you've learned, significant growth in brain structures influences the cognitive developments of adolescence, and these changes impact individuals' risk perception, emotion regulation, and decision-making capabilities. In particular, the frontal lobe and limbic systems are not fully mature in adolescence. The frontal lobe supports rational decision-making, planning, emotion regulation, and impulse control. The limbic system—a collection of structures active in memory formation, emotion processing, and sensory integration—contains the brain's reward center that is important in teen growth.

Teen decision-making is often characterized by a balance between risk-taking and reward-seeking behaviors. Adolescents tend to be more sensitive to potential rewards and less sensitive to potential risks compared to adults. And, at its most basic level, decision-making consists of choosing a course of action from several possibilities (Fischhoff & Broomell, 2020; Hardman, 2009). Rational decision-making requires assessing the levels of risk and reward and weighing the probability of one against the likelihood of the other. Teens often take more risks than adults, because they weigh risks and rewards differently than adults do (Gillespie, 2019).

Adolescents are more sensitive to reward cues in their environment than are children or adults (Andersen, 2016). For example, in a study examining the response to monetary rewards, researchers found that adolescents showed significantly greater activation in the nucleus accumbens, a key brain region involved in reward processing, compared to both children and adults (Becker et al., 2023). The nucleus accumbens is connected to both the hippocampus and the amygdala and is considered the brain's reward center. As brain development occurs, adolescents are likely to have less activation in this reward center of the brain; this, in turn, will reduce risky decision-making as they mature in adulthood.

Development of the limbic system also makes peer relationships more intriguing to teens and is associated with increased novelty seeking, leading teens to continually seek out new and intriguing experiences that may bring reward (or risk) (Steinberg, 2008). The limbic system develops earlier than the prefrontal cortex, making early and middle adolescence a particularly vulnerable time for teens because this is the period of the greatest mismatch in the developmental timeline, resulting in a window of vulnerability for increased risk-taking (Andrews et al., 2021; Steinberg, 2008). For instance, a sixteen-year-old's propensity to skateboard without a

helmet or to accept risky dares from friends most likely reflects limbic system activation leading to pleasure-seeking behaviors and response to peer pressure rather than a desire to incur injury from risk. Essentially, an adolescent's brain has a fully developed reward center providing plenty of dopamine, also known as a "feel good" hormone, but does not have the fully developed prefrontal cortex to keep those feelings under control.

LINK TO LEARNING

Risk-taking is not always a negative. While there are unhealthy risks that teens may pursue, risks are also a part of healthy growth and development. Adults should recognize that risks foster growth and learning (https://openstax.org/r/104TeenRisk) and support teens through those experiences.

Adolescents are especially sensitive to rewards. The neurotransmitter dopamine helps transmit signals in the reward circuits of the brain. During adolescence, dopamine activity increases significantly. This increase actually makes rewarding activities less satisfying because the brain already has a relatively larger amount of dopamine. As a result, to experience the same amount of "feel good" reward from an activity that an adult might, adolescents seek out more novel experiences (Steinberg, 2008) and often higher-risk experiences. This can lead adolescents to be more likely to take bigger risks when driving, making decisions related to sexual behaviors, or making decisions regarding substance use (Khurana et al., 2015; Spear, 2013). In a variety of activities, teens are more likely to seek out more rewarding activities, even when those highly rewarding activities also come with risks. For example, it might be quite a thrill to steal a shopping cart from a grocery store, climb inside it, and have your friends push you down a road, but this decision also entails the possibility of sustaining physical injury and getting into trouble with law enforcement (Figure 9.11). For the developing teenager seeking stimulation and reward, however, riding in the shopping cart may be irresistible in the moment.

FIGURE 9.11 Teenagers are more drawn to exciting and rewarding activities. This can sometimes lead them to take risks, like riding in shopping carts, just for the thrill of it. (credit: "shopping cart race" by Sarah Mirk/Flickr, CC BY 2.0)

Another important influence on risk-taking behavior is teenagers' heightened interest in the social world. The pubertal changes of adolescence have many effects, including increasing the relevance of the hormone oxytocin, a chemical messenger that contributes to the formation of attachment and social relationships. Oxytocin is linked to fostering peer interactions and social support among teenagers. Higher levels of oxytocin have been associated with greater trust, cooperation, and prosocial behavior toward peers (He et al., 2018). In adolescence, oxytocin levels, along with rapid development of the brain's social and emotional processing areas, means that social features of the environment take on greater importance and impact in adolescent decision-making (Anderson, 2023; Gillespie, 2019). In fact, approval from peers becomes as meaningful as any type of nonsocial reward, such as money or a favorite food. This social influence combined with the desire to

seek greater sources of reward helps explain why teens make the decisions they do (Steinberg, 2008).

Teens take risks not because they're incapable of complex hypothetical and deductive reasoning; they are perfectly capable of imagining the consequences of various choices they might make. In fact, researchers have found no real differences between adults and adolescents in their perception of the risk level of their choices (Ivers et al., 2009; Knoll et al., 2017). What's different is that in considering the trade-offs, adolescents pay more attention to the possible rewards than to the risks, even more so when the rewards have a social element involving peer approval.

This is a critical distinction to make because it suggests that educational programs that aim to increase an adolescent's awareness of how risky things may be will not help. Adolescents in a classroom setting can think in sophisticated ways about complex situations, carefully weighing the pros and cons (e.g., Steinberg, 2015). It's when these same adolescents step into a nuanced everyday situation, combined with peer influence, that their risk threshold and decision-making may be different. Adolescents know the risks quite well, it's just not how they are making decisions in the moment.

LINK TO LEARNING

Young scholar Kashfia Rahman became intrigued during her own teenage years about why some adolescents could be extremely "smart" but engage in high-risk behaviors that don't seem smart. Listen to Kashfia Rahman discuss her research process and findings on teenagers' risk-taking (https://openstax.org/r/104TEDRahman) in this TED Talk.

Risky Behaviors

After considering the brain development that underlies adolescents' decision-making, let's consider some specific common risky behaviors, such as unsafe driving and substance use.

The YRBSS monitors risky transportation-related behavior. In 2019, 43 percent of youth in the United States reported they did not always wear a seat belt while riding in a car. Nearly 17 percent reported having ridden with a driver who had been drinking alcohol, and 5.4 percent reported having driven when they had been drinking. Texting while driving remains a frequent risky choice, with 39 percent of teens reporting they have texted (or sent emails) while driving.

Teen delinquency, also known as juvenile offending, is the act of participating in unlawful behavior as a minor or individual younger than the statutory age of majority (i.e., under eighteen years of age in most countries). Overall, delinquency has declined over the past couple decades with only around 34 percent of adolescents reporting engaging in any criminal behavior (Baumer et al., 2017). These behaviors can range from relatively minor offenses such as shoplifting or vandalism to more serious crimes such as drug-related offenses, assault, and theft. Lower parental monitoring, teen-parent conflict, absenteeism, school dropout, poor academic performance, and a disrespectful attitude toward teachers and other school authorities are risk factors for delinquent adolescents (Bendezú et al., 2018; Dong et al., 2015). Furthermore, youth who experience social disadvantage including poverty, dangerous neighborhoods, and child maltreatment, are at an increased risk of juvenile delinquency (De Coster et al., 2022; Vidal et al., 2017). However, interventions with youth that focus on socioemotional well-being have been shown to reduce future offenses in these youth as well (Vidal et al., 2017).

LINK TO LEARNING

Should adolescents be tried as adults (https://openstax.org/r/104delinquency) when they commit a crime? One way developmental psychology can help inform improved care of adolescents is by considering adolescent brain development and the goals of rehabilitation when youth commit crimes. Review this brief video to learn more about the issue.

Substance use among youth is a major public health concern and is associated with several potentially harmful consequences such as an increased risk of addiction. Adolescents who experience certain risk factors, including availability of substances, social disadvantage, poor parent-relationship quality, and higher risk-taking behaviors, are more likely to use substances (Degenhardt et al., 2016). Additionally, studies in the United States and Thailand have found that being male, having poor academic performance, not residing with parents, and having family members and peers engaged in drug use all increase the risk of substance use (Assanangkornchai et al., 2018; Degenhardt et al., 2016).

In 2023, the CDC reported that adolescents are most likely to use alcohol among all drugs, with 22 percent having consumed alcohol in the past month, compared to 17 percent who had used marijuana in the past month. A 2023 CDC survey indicated that approximately 15 percent of middle schoolers and nearly 28 percent of high schoolers had experimented with tobacco at some point.

Adolescent use of illicit drugs, including cocaine, heroin, and methamphetamine, has declined over the past couple of years. In 2023, 10 percent of female youth reported such use, as did 10 percent of males. The YRBSS monitors the use of prescription opioids separately and found similar rates of use as for illicit drugs (14 percent of female youth and 9 percent of male youths). From 2021 to 2023, the CDC reported a decline in use of illict drugs and misuse of prescription opioids for Black, White, and Hispanic youth. Meanwhile, there were increases in misuse of prescription opioids and illicit drugs in LGBTQ+ youth. Some research indicates that bullying and victimization experiences predicted a higher risk of drug use for LGBTQ+ youth (e.g., Wheldon et al., 2023).

Broadly, the YRBSS data have shown either no change in drug use or a decline in drug use across all groups and drug use types in high school students since 2019. Some research indicates that the declines in these risky behaviors may be due to adolescents showing less interest in risk-taking behaviors, having less unstructured social time with friends, and changing social norms in the age of risk-taking, which can lead to risk-taking behaviors beginning later in adolescence (Ball et al., 2023). Still other research indicates that the declines may be related to social changes during and following COVID-19, including less time spent with peers and increases in parental supervision (Compton et al., 2023). While these trends are largely encouraging, they do show that some youth are still at high risk of drug use, particularly when they face other contextual risks.

A few studies have shown an association between insufficient sleep and unhealthy risk behaviors including alcohol use, tobacco smoking, marijuana use, and abuse of other illicit/prescription drugs (McKnight-Eily et al., 2011; Winsler et al., 2015). Overall, teens who abuse drugs are also reported to have higher rates of physical and mental illness and reduced overall health and well-being (Schulte et al., 2013).

LINK TO LEARNING

Listen to teenager Megan Hanley (https://openstax.org/r/104TEDHanley) discuss her personal struggles with alcoholism and her experience with youth.

References

Andersen, S. L. (2016). Commentary on the special issue on the adolescent brain: Adolescence, trajectories, and the importance of prevention. *Neuroscience and Biobehavioral Reviews*, 70, 329–333. https://doi.org/10.1016/J.Neubiorev.2016.07.012

Anderson, J. E. (2023). The teenage brain: Under construction. *Issues in Law & Medicine, 38*(1), 107.

Andrews, J. L., Ahmed, S. P., & Blakemore, S. J. (2021). Navigating the social environment in adolescence: The role of social brain development. *Biological Psychiatry, 89*(2), 109–118. https://doi.org/10.1016/j.biopsych.2020.09.012

Assanangkornchai, S., Li, J., McNeil, E., & Saingam, D. (2018). Clusters of alcohol and drug use and other health-risk behaviors among Thai secondary school students: A latent class analysis. *BMC Public Health, 18*, 1–10. https://doi.org/10.1186/s12889-018-6205-z

Ball, J., Grucza, R., Livingston, M., Ter Bogt, T., Currie, C., & de Looze, M. (2023). The great decline in adolescent risk behaviours: Unitary trend, separate trends, or cascade? *Social Science & Medicine, 317*. https://doi.org/10.1016/j.socscimed.2022.115616

Baumer, E. P., Cundiff, K., & Luo, L. (2021). The contemporary transformation of American youth: An analysis of change in the prevalence of delinquency, 1991–2015. *Criminology, 59*(1), 109–136. https://doi.org/10.1111/1745-9125.12264

Becker, M., Yu, Y., & Cabeza, R. (2023). The influence of insight on risky decision making and nucleus accumbens activation. *Scientific Reports, 13*(1), 17159. https://doi.org/10.1038/s41598-023-44293-2

Bendezú, J. J., Pinderhughes, E. E., Hurley, S. M., McMahon, R. J., & Racz, S. J. (2018). Longitudinal relations among parental monitoring strategies, knowledge, and adolescent delinquency in a racially diverse at-risk sample. [Supplemental material] *Journal of Clinical Child & Adolescent Psychology, 47*(1), S21–S34. https://doi.org/10.1080/15374416.2016.1141358

Centers for Disease Control and Prevention. (2020, February 10). *Teen substance use & risks*. U.S. Department of Health and Human Services. https://www.cdc.gov/healthyyouth/factsheets/substance_use_fact_sheet-basic.htm

Centers for Disease Control and Prevention (2024). *Youth risk behavior survey data summary & trends report: 2013–2023*. U.S. Department of Health and Human

Services. https://www.cdc.gov/yrbs/dstr/index.html
Compton, W. M., Flannagan, K. S. J., Silveira, M. L., Creamer, M. R., Kimmel, H. L., Kanel, M., Blanco, C., & Volkow, N. D. (2023). Tobacco, alcohol, cannabis, and other drug use in the US before and during the early phase of the COVID-19 pandemic. *JAMA Network Open, 6*(1). https://doi.org/10.1001/jamanetworkopen.2022.54566
De Coster, S., Heimer, K., & Sanchagrin, K. (2022). Impoverished single mother households and violent delinquency: Bonding, negative, and bridging social capital. *Youth & Society, 54*(7), 1200–1224. https://doi.org/10.1177/0044118X211017612
Degenhardt, L., Stockings, E., Patton, G., Hall, W. D. &, Lynskey, M. (2016). The increasing global health priority of substance use in young people. *Lancet Psychiatry*. 3(3), 251–64. https://doi.org/10.1016/S2215-0366(15)00508-8
Dong, B., Gibson, C. L., & Krohn, D. M. (2015). Gang membership in a developmental and life-course perspective. In S. H. Decker & D. C. Pyrooz (Eds.), *The handbook of gangs* (pp. 78–97). Wiley.
Fischhoff, B., & Broomell, S. B. (2020). *Judgment and decision making. Annual Review of Psychology, 71*, 331–355. https://doi.org/10.1146/annurev-psych-010419-050747
Gillespie, D. (2019). *Teen brain*. Macmillan Publishers Australia.
Guyer, A. E., Silk, J. S. & Nelson, E. E. (2016). The neurobiology of the emotional adolescent: From the inside out. *Neuroscience & Biobehavioral Reviews, 70*, 74–85. https://doi.org/10.1016/j.neubiorev.2016.07.037
Hardman, D. (2009). *Judgment and decision making: Psychological perspectives*. Blackwell Publishing; British Psychological Society.
Institute of Medicine. (2011). *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. The National Academies Press. https://doi.org/10.17226/13128
Ivers, R., Senserrick, T., Boufous, S., Stevenson, M., Chen, H.Y., Woodward, M. & Norton, R. (2009). Novice drivers' risky driving behavior, risk perception, and crash risk: Findings from the DRIVE study. *American Journal of Public Health, 99*(9), 1638–1644. https://doi.org/10.2105/AJPH.2008.150367
Khurana, A., Romer, D., Betancourt, L. M., Brodsky, N. L., Giannetta, J. M., & Hurt, H. (2015). Experimentation versus progression in adolescent drug use: A test of an emerging neurobehavioral imbalance model. *Development and Psychopathology, 27*(3), 901–913. https://doi.org/10.1017/S0954579414000765
Knoll, L. J., Leung, J. T., Foulkes, L., & Blakemore, S.-J. (2017). Age-related differences in social influence on risk perception depend on the direction of influence. *Journal of Adolescence, 60*, 53– 63. http://dx.doi.org/10.1016/j.adolescence.2017.07.002
McKnight-Eily, L.R., Eaton, D.K., Lowry, R., Croft, J.B., Presley-Cantrell, L. & Perry, G.S (2011). Relationships between hours of sleep and health-risk behaviors in US adolescent students. *Preventive Medicine, 53*(4–5), 271–273. https://doi.org/10.1016/j.ypmed.2011.06.020
Pilatti, A., Godoy, J. C., Brussino, S. A., & Pautassi, R. M. (2013). Patterns of substance use among Argentinean adolescents and analysis of the effect of age at first alcohol use on substance use behaviors. *Addictive Behaviors, 38*(12), 2847–2850. https://doi.org/10.1016/j.addbeh.2013.08.007
Sam-Angsri, N., Assanangkornchai, S., Pattanasattayawong, U., & Muekthong, A. (2011). Health-risk behaviors among high-school students in southern Thailand. *Journal of the Medical Association of Thailand, 93*(9), 1075.
Schulte, M.T. & Hser, Y.I. (2014) Substance use and associated health conditions throughout the lifespan. *Public Health Reviews, 35*(2). https://doi.org/10.1007/BF03391702
Spear, L. P. (2013). Adolescent neurodevelopment [Supplemental material]. *Journal of Adolescent Health*, *52*(2), S7–S13. https://doi.org/10.1016/j.jadohealth.2012.05.006
Steinberg, L. (2008). A social neuroscience perspective on adolescent risk-taking. *Developmental Review, 28*(1), 78–106. https://doi.org/10.1016/j.dr.2007.08.002
Steinberg, L. (2015) How to improve the health of american adolescents. *Perspectives on Psychological Science, 10*(6), 711–715.
Vassallo, S., & Swami, N. (2018). Tweens and teens: What do they worry about? *Growing Up in Australia*, 133.
Vidal, S., Steeger, C. M., Caron, C., Lasher, L., & Connell, C. M. (2017). Placement and delinquency outcomes among system-involved youth referred to multisystemic therapy: A propensity score matching analysis. *Administration and Policy in Mental Health and Mental Health Services Research, 44*, 853–866. https://doi.org/10.1007/s10488-017-0797-y
Wheldon, C. W., Watson, R. J., Cunningham, C., & Fish, J. N. (2023). State marijuana laws and marijuana use among sexual and gender minority youth in the United States. *LGBT Health, 10*(2), 121–129. https://doi.org/10.1089/lgbt.2021.0419
Winsler, A., Deutsch, A., Vorona, R. D., Payne, P. A., & Szklo-Coxe, M. (2015). Sleepless in Fairfax: The difference one more hour of sleep can make for teen hopelessness, suicidal ideation, and substance use. *Journal of Youth and Adolescence*, *44*(2), 362–378. https://doi.org/10.1007/s10964-014-0170-3

Key Terms

abstinence-only education teaches that abstaining from sex is expected until marriage; this educational track typically excludes information about the utility of contraception and condoms to prevent pregnancy and sexually transmitted infections

abstinence-plus education promotes abstinence but includes information about contraception and condoms

adolescence transition period of physical, cognitive, social, and emotional growth and development of an individual from childhood to adulthood

adolescent egocentrism kind of self-centeredness whereby adolescents tend to view themselves as the central figure in a drama unfolding daily

amygdala brain structure responsible for emotional processes

circadian rhythm individual's biologically based pattern of physiological events that occur on a daily cycle

cognitive domains in the information-processing perspective, the biological supports for various thinking abilities

comprehensive sex education offers medically accurate, age-appropriate information about development, sexual behavior, abstinence, consent, healthy relationships, life and communication skills, sexual orientation, and gender identity

deductive reasoning process of testing out statements, or propositions, in a logical and orderly way based on a general premise

formal operations stage of cognitive development in which the adolescent has achieved formal adult thinking capabilities, including the ability to reason using formal logical systems and symbols

hippocampus brain structure responsible for memory formation

hypothalamus brain structure responsible for hormonal production and control center

hypothetical reasoning ability to make predictions about what might occur given a set of circumstances

imaginary audience distinct sense that everyone is watching, thinking and interested in oneself; a consequence of adolescent egocentrism

invincibility fable feature of the personal fable where adolescents believe that they cannot be harmed or defeated

limbic system set of brain structures that develop over the course of adolescence in terms of their primary functionality as well as their connections and coordination with other areas of the brain

menarche first menstruation in girls

perceptual speed ability to automatically and efficiently process novel visual information and make quick decisions

personal fable belief that adolescents have about their uniqueness in emotions and immortality

primary sex characteristics physical developments that are directly related to the ability to reproduce

propositional logic ability to make a logical conclusion based on the imagined outcome of a scenario rather than the observation of the actual scenario

puberty period of time and the process whereby children transition to physical and reproductive maturity

relativistic thinking ability to think in multiple dimensions and to realize that most statements of fact are relative to the position of the observer

scientific thinking thinking that involves the systematic testing of possibilities

secondary sex characteristics physical developments that accompany primary sex characteristics but are not directly related to the ability to reproduce

secular trend the tendency for successive generations to reach puberty earlier, such as an earlier age of menarche among females today than their counterparts from past cohorts.

sex positivity approach to adolescent sexuality that encourages exploration and experimentation within safe and openly discussed parameters

sexually transmitted disease (STD) sexually transmitted infection that has led to some symptom of disease

sexually transmitted infection (STI) infection transmitted through sexual contact, caused by bacteria, viruses, or parasites

spermarche development of the testes in boys resulting in semen, sperm, and the first ejaculation
thalamus brain structure responsible for sensory integration and relay
thelarche development of the breasts in girls

Summary

9.1 Physical Growth and Development in Adolescence

- Adolescence is a period of growth and development that involves increases in height, muscle mass, and fat tissue.
- The two brain regions that play a crucial role in teen growth and maturation are the frontal lobe and limbic system. The frontal lobe and prefrontal cortex are involved with executive functioning, rationality, decision making, planning, and organization. The limbic system is responsible for hormonal changes, emotions, and the sleep-wake cycle.
- Adequate nutrition and a balanced diet are crucial during adolescence to support growth, development, and overall health. Adolescents need eight to ten hours of sleep per night for optimal health and well-being. Regular check-ups, vaccinations, and screenings are important for preventing and detecting health issues.

9.2 Puberty, Sexual Behavior, and Sexual Health in Adolescence

- Puberty refers to the period of physical development during which a teen's body becomes capable of sexual reproduction. Puberty is marked by various physical changes including growth spurts, maturation of reproductive organs (primary sexual characteristics), and development of secondary sexual characteristics.
- Genetic factors play a role in determining the timing of puberty. Environmental factors such as nutrition, physical activity, and access to health care can impact the timing of puberty. Finally, psychological stressors, such as family disruptions, can impact hormone regulation and consequently affect the timing of puberty.
- Adolescent sexual behaviors encompass a range of experiences and expressions. Adolescents may engage in various behaviors, such as forming romantic relationships, exploring sexual activity, and seeking information about sexual health.
- Teen pregnancy factors are influenced by SES, early onset of puberty, access to comprehensive sex education, and cultural attitudes toward sexuality.
- Prevention of sexual health risks includes promoting contraceptive use, providing access to reproductive health-care services, and implementing educational programs addressing healthy relationships, consent culture, and responsible sexual behavior.

9.3 Cognition in Adolescence

- Adolescent cognition as explained by Piaget's cognitive development theory suggests that adolescents undergo significant cognitive changes, including the ability to think abstractly and engage in hypothetical reasoning.
- The information processing model emphasizes how adolescents acquire, store, and retrieve information, highlighting improvements in attention, memory, and problem-solving skills.
- Adolescent egocentrism describes teens' tendency to focus on their own thoughts and feelings while struggling to consider perspectives different from their own, a phenomenon often observed during this developmental stage.
- Adolescent cognitive development is influenced not only by biological factors such as brain maturation and hormonal changes but also by environmental factors including social interactions and parental expectations. These influences shape teenagers' thinking abilities, decision-making skills, and overall cognitive development.

9.4 Decision-Making and Risky Behaviors in Adolescence

- Teen risk perception and decision-making are influenced by factors such as brain development, social influences, and individual characteristics. Adolescents often underestimate risks and prioritize short-term gains due to the immaturity of their prefrontal cortex, which is responsible for impulse control and decision-making.
- Adolescents are especially vulnerable to peer pressure and may engage in risky behaviors to gain acceptance or approval from their peers. Sensation-seeking tendencies, coupled with underdeveloped impulse control and risk assessment skills, can lead to reckless driving, delinquent activities, and experimentation with substances during this stage of development. Additionally, environmental factors such as access to drugs, alcohol, and opportunities for delinquent behavior can further exacerbate risky behaviors among teens.

Review Questions

1. Based on guidelines from the Centers for Disease Control and Prevention, how many hours of sleep a night do adolescents need for optimal functioning?
   a. five to six hours
   b. six to seven hours
   c. eight to ten hours
   d. eleven to thirteen hours

2. The cycle that governs the sleep wake cycle on a rotating, twenty-four-hour pattern is called the _____ rhythm.
   a. circadian
   b. hypothalamic
   c. diurnal-nocturnal
   d. anterograde

3. What dimensional/proportional changes are typically seen in a female as she goes through adolescence?
   a. Her waist increases relative to her shoulders and bust.
   b. Her hips increase relative to her shoulders and waist.
   c. Her shoulders increase relative to all lower regions of her body.
   d. Her hips and shoulders will increase in a one-to-one ratio, both more than her waist.

4. By the end of adolescence, what is true of the human brain?
   a. It will be at its adult weight and size.
   b. It will not have grown much since the midteens.
   c. It will be at 60 to 70 percent of its final dimensions.
   d. It will be thinner and lighter, but more lateralized, than it was prior to puberty.

5. Which option is an example of a primary sex characteristic?
   a. facial hair
   b. enlargement of the uterus
   c. development of breast buds
   d. growth of pubic hair

6. Which of the following statements is true regarding U.S. adolescents and sexual intercourse?
   a. More than half of all high school students report having had sexual intercourse.
   b. Most teens—over 80 percent—remain virgins until college.
   c. Fifteen percent of adolescent females have had sexual intercourse.

d. Just under one-third of teens report having had sexual intercourse.

7. What group has reported the highest rate of experiencing sexual violence?
a. LGBQ+ teens
b. Hispanic teens
c. Native American teens
d. White teens

8. The adolescent birth rate has _____ over the past few decades.
a. increased sharply
b. increased steadily
c. stayed the same
d. declined steadily

9. In regard to the timing of the onset of puberty, who is more at risk for a depressed mood, negative body image, eating disorders, substance use, promiscuity, and school problems?
a. a male who experiences late-onset puberty
b. a female who experiences late-onset puberty
c. a boy who experiences early-onset puberty
d. a girl who experiences early-onset puberty

10. What is a property of formal operational thought?
a. believing that inanimate objects are alive and can have humanlike thoughts and feelings
b. the ability to use abstract, hypothetical, and deductive reasoning skills
c. the recognition that only physical appearance represents reality
d. the ability to consider multiple perspectives at the same time

11. Jamarcus realized that the method he used to study for his history test last time didn't work. He decides to try a new approach. Which cognitive skill is Jamarcus demonstrating?
a. assimilation
b. perceptual speed
c. metacognition
d. propositional logic

12. Which of these concepts can be described as "interactionist"?
a. the study of animal relationships in different species
b. a mathematical equation that can only be solved one way
c. the environment and the individual reinforcing each other
d. the psychological study of the family environment

13. Elise has a sense that her problems are unique, that nobody has ever experienced them, and that her pain is a special kind of suffering that nobody has *ever* felt. This is an example of the concept of _____.
a. the imaginary audience
b. adolescent egocentrism
c. metacognition
d. the personal fable

14. Which substance that two-thirds of teens report having tried before twelfth grade is the most commonly used in this age group?
a. alcohol

b. cannabis
c. heroin
d. tobacco

15. Which hormone increases during puberty, which in turn can contribute to the formation of attachment and social relationships?
a. glutamate
b. oxytocin
c. gamma-aminobutyric acid (GABA)
d. norepinephrine

Check Your Understanding Questions

16. Identify and describe two factors that have led to a decline in teen pregnancy rates.

17. Identify and describe two benefits of a comprehensive sex education curriculum.

18. Identify three cognitive domains that develop rapidly during adolescence.

19. Describe the changes in thinking that occur during Piaget's formal operational stage, and cite two real-life examples.

20. Briefly describe the role of the brain's reward processes in adolescent risk-taking behavior.

21. Briefly describe the role of reward sensitivity in adolescent risk-taking behavior.

Personal Application Questions

22. Reflect on your own physical development during adolescence. Did you experience any significant growth spurts or changes? How did these changes impact your self-esteem and interactions with peers?

23. Think about the times when you made decisions during your adolescence that you now see differently as an adult. How do you think the development of your brain at that time influenced your decision-making process?

24. Consider the health care you received during adolescence. Did you feel that your health-care needs were adequately met, and were you comfortable discussing personal health issues with your provider? If not, what do you think could have made the experience better?

25. How did your sleep patterns change during adolescence? Do you think you were getting enough sleep? Reflect on how your sleep habits impacted your daily life, including your academic performance and mood.

26. Reflect on your experience of learning about puberty. Did you feel prepared for the changes you went through, or did you find them surprising? What, if anything, would have helped you feel more comfortable or informed during that time?

27. Think about the messages you received about sex and relationships during your adolescence. How did these messages shape your views on sexual behavior? Do you believe they had a positive or negative impact on your sexual health decisions?

28. Consider the role of peer pressure in sexual decision-making. Have you ever felt pressured by friends or peers regarding sexual behavior? How did you handle that situation, and what did you learn from it?

29. Reflect on the portrayal of adolescent sexual behavior in media and popular culture. How do these portrayals compare to your own experiences or the experiences of those around you? What effect do you think these portrayals have on adolescents' sexual health and behavior?

30. Reflect on a time during your adolescence when you found yourself thinking about abstract concepts like justice, equality, or truth. How did your understanding of these concepts evolve as you grew older, and what experiences or influences contributed to that change?

31. Consider a situation in which you had to make a difficult decision during your teenage years. How did you approach the problem, and how did your ability to think through different possibilities influence the outcome?

32. Recall a time when you felt strongly about questioning or challenging a rule or belief held by your parents or teachers. What was the situation, and how did your cognitive development at the time influence your reaction and reasoning?

33. Think about an instance where you felt that everyone was watching or judging you (an "imaginary audience"). How did this belief affect your behavior or decisions at the time, and how do you view that experience now?

34. Think back to a time during your adolescence when you were faced with a decision involving potential risk. What factors influenced your decision? Did you consider the possible consequences, or were you more focused on the immediate rewards? How did the outcome of this decision shape your perspective on risk-taking?

35. Reflect on a situation where you felt peer pressure to engage in a risky behavior. How did the presence of your peers affect your risk assessment and decision-making? Looking back, would you have made the same decision if you were alone? Why or why not?

36. Consider how your decision-making process has changed from adolescence to now. What are some specific ways in which you believe your ability to assess risks and rewards has matured? Provide an example of a recent decision that illustrates this change.

Essay Questions

37. Evaluate the role of nutrition and sleep in supporting healthy physical and cognitive development during adolescence. How do poor nutrition and insufficient sleep impact adolescents' growth and academic performance?

38. Should adolescents be able to make important medical decisions without their parents' involvement? Why or why not? Cite material from the chapter to support your reasoning.

39. Discuss the various factors that influence the timing of puberty. How do biological, environmental, and sociocultural factors interact to affect when puberty begins? What are some potential psychological and social consequences of early or late puberty?

40. Evaluate the impact of comprehensive sex education on adolescent sexual behavior and health outcomes. How does comprehensive sex education compare to abstinence-only education in terms of effectiveness? Support your answer with evidence from research studies.

41. Reflect on how your cognitive abilities evolved during adolescence, specifically in terms of your ability to think abstractly and reason logically. Provide examples from your teenage years where you engaged in hypothetical reasoning or complex problem-solving. How did your environment, such as your family, school, or culture, influence your cognitive development during this time?

42. As a school counselor, you have received concerns from a parent about their 15-year-old son, Ricky, who is engaging in risk-taking behavior, such as performing dangerous stunts on his skateboard, especially when other teens are watching and recording his actions. The parent wants to know if this behavior is "normal" for his age or if they should be concerned. Write a response that explains the typical brain development during adolescence and how it influences risk-taking behavior. Provide guidance on how the parent can approach this situation.

Social and Emotional Development in Adolescence (Ages 12 to 18)

10

FIGURE 10.1 Young people are trying their hardest to fit in with their friends and peers while also trying to establish themselves as independent individuals. (credit: modification of work "Teenagers" by Monica Arellano-Ongpin/Flickr, CC BY 2.0)

CHAPTER OUTLINE

10.1 Theories of Adolescent Socioemotional Development
10.2 Emotional and Self-Development in Adolescence
10.3 Identity and Culture: Race/Ethnicity, Gender, and Sexuality in Adolescence
10.4 Social Contexts in Adolescence
10.5 Family and Community Contexts in Adolescence

WHAT DOES PSYCHOLOGY SAY? Twelve-year-old Madeleine checks her hair in the mirror one last time, grabs her belongings, and heads out to the car where her mother Cara is waiting. She asks her mother to please roll up the window, worried that a classmate might hear Cara's outdated music. The car stops at the middle school entrance, and Madeleine quickly gathers her gear and jumps out. Cara calls, "I love you!" and Madeline sighs but offers the smallest smile on her face and a wave. Cara drives away, taking some comfort in the smile on her daughter's face as Madeleine excitedly joins several friends entering the building. The friends are all wearing the same sneakers and carrying similar backpacks. On her drive to work, a mix of emotions and thoughts cross Cara's mind:

- Where did my carefree little girl go? Is this the start of her adolescence?
- Why does she always seem annoyed with me these days?
- Why is she so concerned about fitting in?
- Is she too focused on the trends she sees on social media?

- Did she pack enough food for lunch and her after-school track practice?

This chapter explores the field of lifespan development's perspectives and answers to these and many other everyday concerns of adolescence.

10.1 Theories of Adolescent Socioemotional Development

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Discuss theories about the role of adolescence in the lifespan
- Describe adolescence's central challenge: the search for identity
- Identify the developmental tasks and milestones of the adolescent period

Seventeen-year-old Armaan rushes downstairs with a basket full of his laundry. He loads the washer and readies his change of clothes and water bottle for after-school marching band practice. That evening, after a three-hour practice, Armaan grabs a veggie burger with friends. Back home, he takes a quick shower and starts studying for a big history test. Before he goes to bed, he texts with friends as he unloads the dishwasher. It's only Monday, but he's excitedly anticipating watching the high school football game on Friday night and sleeping in on Saturday.

This brief window into the life of an older adolescent leads to some big-picture questions about this period of the lifespan, including what its central developmental tasks are and how psychologists mark progression through them. Adolescence is a time of profound and often rapid change in multiple dimensions, including identity exploration and achievement, and emotional development. These changes necessitate sensitive and accommodating responses from individuals who care for teens, as well as from societal institutions like schools and governments that serve them.

What Is Adolescence?

Human development is a series of transitions, particularly so in adolescence, which can bring sudden and dramatic changes like the onset of puberty, changes in voice, and growth in height. Adolescence is a time many societies set aside for children to transition to adult stature, status, roles, and capabilities. In other countries, children may quickly transition to adult responsibilities without being afforded the time and space to adjust to this immense developmental shift.

For instance, in several Asian and African cultures, adolescents tend to have strong family obligations and responsibilities, emphasizing group harmony and family loyalty. Older adolescents in Cambodia and rural Vietnam assume caretaking tasks and the family supporter's role (Yi, 2015). Teenage girls may face stricter gender roles and fewer opportunities than boys. Early marriage and childbearing are common in Bangladesh (Uddin, 2021) and Nigeria (Musa et al., 2021). In WEIRD nations like the United States and Canada, many families consider finishing high school a marker of adulthood, and eighteen-year-old graduates may begin to work full time and start their own households or may enter further schooling or a trade. Adolescence focuses on preparation for adulthood, such as through extended formal education, and it precludes adult status and its markers such as driving and beginning to participate in the workforce (Figure 10.2).

FIGURE 10.2 While the freedom to drive enhances teen autonomy, it also brings significant responsibility to drive safely. (credit: modification of work "With Driver's License" by "slgckgc"/Flickr, CC BY 2.0)

The smoothness of the adolescent transition in countries such as the United States and Canada also varies by family composition, cultural beliefs and backgrounds, available opportunities, and socioeconomic status (SES). Adolescents from single-parent families, for example, often help with household tasks like caring for younger siblings and may even contribute to household finances. Teens who grow up in farming families or families that own a bodega or other business may begin to help run the family business and then continue to do so, if they also enjoy that industry. Teens who show interest in an academic education beyond high school may spend after-school and summer hours in academic enrichment activities. Still other teens who show interests in craft or trade industries may pursue hobbies such as sewing, electrical work, or woodworking to begin identifying potential occupational options. As these examples show, it is difficult to characterize adolescence in many countries as solely continuous or discontinuous in nature.

To understand the complexities of the adolescent transition, consider the developmental tasks associated with it. These are the biologically, psychologically, and socially relevant challenges of adolescence (Havighurst, 1948; 1972). They include achieving the cognitive development crucial for decision-making, acquiring impulse control and reasoning, developing a sense of self and personal identity, and building friendships while navigating social dynamics to gain a sense of belonging and acceptance. In addition to the biological and physical changes of puberty discussed in Chapter 9 Physical and Cognitive Development in Adolescence (Ages 12 to 18), adolescents also face several psychological and social developmental tasks (Table 10.1). To the

extent that they make individual progress on these tasks, adolescents gradually mature into adulthood.

Psychological	Social
• In early adolescence, teens think concretely and begin to develop moral ideas, develop their sexual identity, and reassess their body image. • As they grow, they start thinking abstractly but may be egocentric, develop better verbal skills, link laws with morality, and start forming strong beliefs (religious or political). • In late adolescence, their abstract thinking becomes more complex. They see the difference between law and morality, have better impulse control, further develop their personal identity, and either deepen or reject their religious and political beliefs.	• In early adolescence, teens start to develop emotional independence from their parents, strongly identify with peers, and may experiment with risky behaviors like smoking. • As they grow, they continue to develop emotional independence from parents, maintain strong peer connections, are more likely to experiment with health risks (like smoking and drinking), show romantic or sexual interest, and begin thinking about careers. • In late adolescence, they develop social independence, form intimate relationships, and strive to acquire career skills and financial independence.

TABLE 10.1 Some Developmental Tasks of Adolescence (source: McIntosh et al., 2003)

Many societies and cultures use explicit markers to recognize progress toward adult status. Anthropologists call such a marker a **rite of passage**. Table 10.2 and Figure 10.3 show some examples (Alcorta & Sosis, 2020). Parents, teens, and society alike put much attention and energy into some of these. Notice that no single marker signifies adult status in all areas of life.

Marker (Rite)	Age of Adult Status (Years)
Participating in bar/bat mitzvah (Jewish religion)	12–13
Participating in quinceañera/o (many Latine cultures)	15
Driving	15–17 depending on the state
Attending “R” rated movie without caregiver	17
Graduating from high school	17–19
Voting	18
Consenting to sexual activity	16–18 (depending upon U.S. state)
Drinking, purchasing alcohol	21
Renting a car	25
Procuring own health insurance	26 (Affordable Care Act, United States)

TABLE 10.2 Some Culture-Based Markers of Adulthood in the United States

(a) (b) (c)

FIGURE 10.3 Rites of passage include (a) having a quinceañera celebration, (b) graduating from high school, and (c) becoming old enough to vote. (credit a: modification of work "Quinceañeras del bicentenario" by Eneas De Troya/Flickr, CC BY 2.0; credit b: "Graduation" by David Harris/Flickr, CC BY 4.0; credit c: modification of work "who's YOUR candidate?" by Erin Leigh McConnell/Flickr, CC BY 2.0)

LINK TO LEARNING

Watch this video about a South Korean coming of age celebration (https://openstax.org/r/104KoreanCeleAge) to learn more.

Psychosocial Theory of Development: Identity versus Role Confusion

To a developmental psychologist, a teenager's social struggles and ever-evolving choices illustrate the work of adolescence: actively exploring interests, abilities, strengths, weaknesses, peer relations, and work and community roles. Collectively, these make up the most important psychosocial development task: the formation of identity.

Identity, also known as ego identity, is an individual's complete sense of who they are, including their traits, capabilities, interests, values, and social roles. The building of **identity** is a lifelong process, but it takes on critical importance in adolescence because of both the sheer number of changes experienced and the sense that life is reaching a point at which our decisions and choices could have lifelong consequences (Branje et al., 2021; Crain, 1992). Forming a coherent identity takes time, and adolescence accommodates this key developmental task. Erik Erikson's contribution to identity is sometimes thought to be one of his greatest insights, perhaps in part due to his own experience as an immigrant with a varied cultural heritage. Erikson moved across multiple countries in his youth, experienced multiple name changes, identified as multi racial, and studied identity in multiple cultural and historic contexts (Miller, 2011).

Erikson's fifth psychosocial stage, **identity versus role confusion**, involves forming a stable and whole identity by first exploring various roles and identities. This stage typically occurs from ages twelve to eighteen years and is distinctive as a stage when individuals try out a variety of roles and personas in a journey to discover their individual identity. Developing an identity leads to strength and stability of identity. Failing to develop an identity results in role confusion, sometimes called diffusion, which leads to feeling fragmented or lost (Orenstein & Lewis, 2022). A strong sense of identity helps teenagers reject negative self-evaluations that don't match their inner and outer experiences, reducing anxiety. As they explore their identity, adolescents consider their past experiences, societal expectations, and personal aspirations to establish their values and discover who they are.

A recent study looked at identity development and depressive symptoms in Belgian adolescents between the ages of twelve to twenty-five years. They found young people generally develop a stronger sense of identity and experience less role confusion, though this can vary at different stages. A strong sense of identity is linked to

fewer depressive symptoms, while role confusion is linked to more depressive symptoms throughout adolescence (Bogaerts et al., 2021).

IT DEPENDS

Should We Take the Teen Movie Genre Seriously?

Film critics and social commentators may dismiss the latest movies about teenage experiences and the coming-of-age process, but they often become huge popular successes, and for good reason. Not only are they highly entertaining, filled with young stars and amusing plots, but they are tailor-made for a teenage audience that likes to see their own experiences represented, and perhaps to see whether the adult filmmakers truly understand them. Some popular examples of the teenage movie genre include *Perks of Being a Wallflower* (2012), *Spider Man: Homecoming* (2017), *Spider-Man: Into the Spider-Verse* (2018), *The Breakfast Club* (1985), *Eighth Grade* (2018), *Mean Girls* (2004, 2023), *Juno* (2007), and *To All the Boys I've Loved Before* (2018).

Almost without exception, these films take place in and around a U.S. high school, and they frequently introduce the audience to various cliques and larger social groups within the school's social ecosystem. For example, in *The Breakfast Club*, a student lists cliques like "brains" and "jocks." *Mean Girls* starts with a character pointing out different social groups. Each clique and crowd offers teenagers a way to select and try on parts of their possible identity, while some crowds are socially selected for them. *Eighth Grade* shows the life of a middle school-high school student, Kayla (Elsie Fisher), navigating anxiety-inducing social situations, social media overload, typical parent-child communication struggles, questions about sexuality, and her personal and public identity. These films highlight a central adolescent experience—exploring and achieving a complete sense of self. They reflect adolescents' experiences, sometimes playfully naming groups and often depicting characters moving through identities and roles to complete a quest. Adults are sometimes peripheral or absent.

Other adolescent themes frequently depicted in movies include inspiration, social comparison, coping, identification and idealization, and strong social relationships that bring joy, gratitude, and loss (Greenwood & Long, 2015). These themes speak to the youth culture that thrives in high schools, where the most important focus seems to be on social status and peer relations. All else pales in importance, even the whole point of school—academics. While sociocultural context and individual personality traits govern the way teens interpret these films and behave in school and out, by responding to these movies with enthusiasm, adolescent audiences tell us they are valid perspectives on their real-life experience.

Recall that in Erikson's theory, development is motivated and fueled by psychosocial crises or challenges. The relatively rapid changes in the physical bodies of adolescents guarantee that others in the social environment will begin reacting differently when around them. For example, the deep voice, tall stature, and facial hair of a fifteen-year-old male might lead others to expectations of mature thinking and behavior, even as he still struggles with some immature thought processes and lack of adult levels of brain development and self-regulation. Interactions between the developing individual and those in their social environment propel developmental progress. The adolescent is motivated to make sense of their changing place in the world and thus begin the process of identity exploration.

Identity Statuses

James Marcia built on Erikson's work by focusing on how best to describe the developing adolescent's identity status at any point in time (Marcia, 1966; 1980). Marcia emphasized two key questions in determining the identity status of an individual: "Is there evidence of identity exploration?" and "Is the individual currently committed to an identity?" The answers, yes or no, establish the adolescent as being in identity achievement, moratorium, foreclosure, or identity diffusion (Figure 10.4). Those who reach identity achievement often arrive after much exploration, while those in moratorium are still exploring different roles without making firm decisions (Kroger et al. 2010). These statuses also take into account various aspects of an individual's

identity, including their occupation, sexuality, beliefs, and values. Often, adolescents move through these identity statuses before settling on successful identity achievement.

Identity Status		
	LOW EXPLORATION	**HIGH EXPLORATION**
HIGH COMMITMENT	**Foreclosure** Prematurely committed to goals or identities without sufficient consideration	**Identity Achievement** Thoughtful decisions made regarding emerging adult roles and values
LOW COMMITMENT	**Diffusion** Undecided because of lack of thought and planning	**Moratorium** Exploring the possibilities but still seeking a calling

FIGURE 10.4 Marcia's identity statuses are defined by two questions. Successful identity achievement requires an individual to have explored various roles before committing to a specific identity. Individuals who commit to an identity without exploration are in identity foreclosure. Those who are actively exploring without committing are in moratorium. Diffusion indicates a failure to explore as well as a failure to commit. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In **identity moratorium**, individuals are actively exploring various identities but not declaring an identity to be fully formed, instead experiencing an "identity crisis." Meeus (2023) noted that adolescents spend much of their time in identity moratorium, where identity is a work in progress. Although the term makes this sound negative, the moratorium provides the psychological space and motivation to explore. A newfound ability to imagine **possible selves**, various identities they may work toward in the future, motivates adolescents to start on the path toward achieving an identity. For example, people often describe college as a great period of moratorium wherein you explore various academic interests and potential paths while meeting a wider range of people.

In **identity diffusion**, which most closely aligns with Erikson's role confusion, individuals have low commitment and often feel lost; they do not actively seek an identity. Marcia (1980) described them as lacking a clear sense of where they will fit into society as an adult and at risk of role confusion. This might be an acceptable identity status in early adolescence, but society's expectation is that all individuals will use these years to explore and pursue interests, abilities, and roles. By exploring roles and interests, adolescents move toward **identity achievement**, the realization and commitment to a coherent understanding of themselves and their relationship with society. This is the pivotal psychosocial achievement of adolescence, and it provides adolescents with an initial sense of direction, purpose, and a starting point in the world at large as they enter adulthood.

In Marcia's concept of **identity foreclosure**, the developing teen shows an early commitment to an identity, claiming they know who they are and what they stand for, even if there is no evidence they did any exploratory work to reach that conclusion. For example, teens in early and even mid-adolescence will sometimes state their political values—such as by taking a particular stance on climate or immigration or foreign policy—but these values typically match those of their parents, and the adolescent cannot elaborate on any specifics. Identity foreclosure may serve a developmental purpose by giving the young adolescent a starting point for later exploration—after all, the world is complex and having an initial set of answers to help make sense of it can be comforting. The key is for the adolescent to eventually begin actively exploring their values and interests, with the goal of backing their own belief system with experience and/or thoughtful consideration. While an adolescent might align with their parents on a value or identity, such as sharing the same religious identity, an adolescent who has identity achievement will be able to fully explain how they arrived at that identity on their own.

While identity achievement often occurs during adolescence or early adulthood, it is not uncommon for it to take many years beyond adolescence for individuals to fully settle into identity achievement. After all, in the decades beyond adolescence we are often learning and growing across several aspects of our identity, potentially shifting in our occupations, family and friendship roles, and moral beliefs or personal values. Achieving identity in adolescence represents a pivotal step in identity, rather than a permanent, unchangeable status.

LINK TO LEARNING

This short Pew Research Center article explores survey data on the similarities between teens' and their parents' religious and political (https://openstax.org/r/104PolRelViews) views.

References

Alcorta, C. S., & Sosis, R. (2020). Adolescent religious rites of passage: An anthropological perspective. In S. Hupp and J. Jewell (Eds.), *The encyclopedia of child and adolescent development* (pp. 1–12). https://doi.org/10.1002/9781119171492.wecad326

Bogaerts, A., Claes, L., Buelens, T., Verschueren, M., Palmeroni, N., Bastiaens, T., & Luyckx, K. (2021). Identity synthesis and confusion in early to late adolescents: Age trends, gender differences, and associations with depressive symptoms. *Journal of Adolescence, 87*, 106–116. https://psycnet.apa.org/doi/10.1016/j.adolescence.2021.01.006

Branje, S., De Moor, E. L., Spitzer, J., & Becht, A. I. (2021). Dynamics of identity development in adolescence: A decade in review. *Journal of Research on Adolescence, 31*(4), 908–927. https://doi.org/10.1111/jora.12678

Crain, W. C. (1992). *Theories of development: Concepts and applications* (3rd ed.). Prentice-Hall, Inc. https://psycnet.apa.org/record/1992-98367-000

Greenwood, D., & Long, C. R. (2015). When movies matter: Emerging adults recall memorable movies. *Journal of Adolescent Research, 30*(5), 625–650. https://doi.org/10.1177/0743558414561296

Havighurst, R. (1972). *Developmental tasks and education*. D. McKay Company. https://psycnet.apa.org/record/1950-00529-000

Havighurst, R. J. (1948). *Developmental tasks and education*. The University of Chicago Press. https://psycnet.apa.org/record/1950-00529-000

Kroger, J., Martinussen, M., & Marcia, J. E. (2010). Identity status change during adolescence and young adulthood: *A meta-analysis. Journal of adolescence, 33*(5), 683–698. https://doi.org/10.1016/j.adolescence.2009.11.002

Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*(5), 551–558. https://psycnet.apa.org/doi/10.1037/h0023281

Marcia, J. E. (1980). Identity in adolescence. *Handbook of adolescent psychology, 9*(11), 159–187. https://scholar.google.com/citations?view_op=view_citation&hl=en&user=xwV-9fgAAAAJ&citation_for_view=xwV-9fgAAAAJ:u-x6o8ySG0sC

McIntosh, N., Helms, P. J., & Smyth, R. L. (Eds.). (2003). *Forfar & Arneil's textbook of pediatrics* (6th ed.). Churchill Livingstone. https://archive.org/details/forfararneilstex6edunse

Meeus, W. (2023). Fifty years of longitudinal research into identity development in adolescence and early adulthood: An overview. *APA handbook of adolescent and young adult development*, 139–157. https://psycnet.apa.org/doi/10.1037/0000298-009

Miller, P. H. (2011). *Theories of developmental psychology* (5th ed.). Worth Publishers.

Musa, S. S., Odey, G. O., Musa, M. K., Alhaj, S. M., Sunday, B. A., Muhammad, S. M., & Lucero-Prisno, D. E. (2021). Early marriage and teenage pregnancy: The unspoken consequences of COVID-19 pandemic in Nigeria. *Public Health in Practice, 2*, 100152. https://doi.org/10.1016/j.puhip.2021.100152

Orenstein, G. A., & Lewis, L. (2022). *Eriksons stages of psychosocial development*. In StatPearls [Internet]. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK556096/

Uddin, M. E. (2021). Teenage marriage and high school dropout among poor girls: A narrative review for family pathways in Bangladesh. *Journal of Research in Social Sciences and Language, 1*(1), 55–76. https://doi.org/10.20375/0000-000D-FF92-F

Yi, C. C. (2015). Adolescents and transition to adulthood in Asia. In S. R. Quah, *Routledge handbook of families in Asia* (pp. 191–210). Routledge. https://doi.org/10.4324/9781315881706

10.2 Emotional and Self-Development in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the course of emotional development during adolescence
- Discuss the development of self-regulation and emotional intelligence in adolescence
- Describe the development of self-concept and self-esteem in adolescence
- Explain the relevance of body image in adolescence

The alarm sounds early on fifteen-year-old Kenji's school days. After dressing and eating breakfast, he practices twenty minutes of meditation each morning. Meditation helps clear his mind and focus his energy and emotions. Today he is especially stressed because he has exams in two classes and a paper due in another. As he enters school, Kenji joins friends exchanging fist bumps. During lunch, two of his tablemates start teasing the girl sitting alone at the end of the table. Kenji weighs saying something to them or moving to a different table to avoid trouble. He decides to move. The end of the school day brings a sense of relief, although several hours of homework await. Once home, he grabs a few rice balls and a piece of candy for a snack, and retreats to his room to scroll through social media for a bit on his phone. Kenji's day is not only busy but full of different motivational states, opportunities for self-regulation, and emotions.

Emotions are the result of a complex set of cognitive, physiological, behavioral, and environmental components and interactions (Ekman et al., 1972, Scherer, 1997). They often motivate behavior, so it's not

surprising that they play a prominent role in adolescent experience. They are important as teens develop an understanding of themselves, including their developing emotional intelligence, self-concept, and self-esteem, and their increased ability to self-regulate.

Emotional Intelligence

For many, adolescence is a time when the social world expands significantly. Not only do teens spend more time outside the home, both in school and at after-school activities, but their new reasoning capabilities, fueled by physical brain developments, make interacting with peers and non family adults a central means of development. They learn to recognize and understand their own emotions, including their triggers, strengths, and weaknesses, and they begin achieving self-awareness. They learn to control impulses, manage stress, and adapt to changing circumstances with the developing skill of self-regulation. They are on their way to achieving emotional intelligence (EI)**,** the ability to recognize their own and others' emotional states and feelings, to regulate emotions, and to remain motivated (Goleman, 1998).

Emotionally intelligent individuals can also express their emotions, convey empathy, and maintain their psychological, social, and emotional well-being (Alina et al., 2021). Through social interactions, adolescents learn to express their emotions in appropriate verbal and nonverbal ways. These communication skills in turn help them grow increasingly adept at resolving conflicts and establishing healthy boundaries in their relationships. And emotional intelligence allows adolescents to use emotions as valuable information for problem-solving with rationality and flexibility.

Parents can also help foster emotional intelligence. In particular, the authoritative parenting style has shown a positive relationship with the development of emotional intelligence; while the authoritarian style has been linked with lower emotional intelligence in adolescents (Nastas & Sala, 2012; Nguyen et al., 2020). Recall that authoritative parents are sensitive to their child's daily needs and emotional states, actively encourage them to express themselves, and help them work through emotional, motivational, and social challenges. These behaviors model the use of emotional intelligence (Reyes-Wapano, 2021).

Emotional intelligence also has long-lasting benefits. Adolescents with high EI have stronger academic performance, are less likely to experience school burnout, have a deeper sense of life satisfaction overall, and tend to view themselves as having the coping skills and capabilities needed to overcome adversity (Collado-Soler, et al., 2023). Next, we'll look at self-regulation more specifically.

Self-Regulation

The major developments in the frontal lobe and limbic system during adolescence support the growing ability to exert self-regulation**,** the ability to manage and control behavior and emotions without outside assistance (Muraven & Baumeister, 2000; McClelland et al., 2017). This skill allows us to change or inhibit certain thoughts, emotions, and behaviors to achieve better outcomes (Baumeister & Alquist, 2009; Moilanen et al., 2015). Related abilities include task persistence, delayed gratification, self-monitoring, self-reward for progress, management of frustration and distress, and the capacity to seek help when needed (Murray & Rosanbalm, 2017) (Figure 10.5).

(a) (b)

FIGURE 10.5 (a) Climate activist Greta Thunberg and (b) advocate for female education Malala Yousafzai became activists as teens and have demonstrated persistence in those activities into adulthood. (credit a: modification of work "Greta Thunberg, March 2020 (cropped)" by © European Union 2020 – Source: EP/Wikimedia Commons, CC BY 4.0; credit b: modification of work "Malala Yousafzai" by Southbank Centre/Flickr, CC BY 2.0)

Self-regulation increases steadily across adolescence, shaped in part by parental and peer influences (Farley & Kim-Spoon, 2014). Caregivers regulate a child's behavior and provide an initial set of expectations and guidance. As an adolescent develops and exhibits self-control, caregivers can reduce the amount of explicit regulation support they provide. A good-quality parent-adolescent relationship predicts good self-regulatory skills in the developing teen. However, this influence can work both ways, and a teen having difficulty regulating their emotions or behaviors will likely contribute to a difficult parent-teen relationship. Caregivers can model many of the same emotion regulation and self-regulation techniques you've learned about to help adolescents improve their own regulation skills. However, they can also begin to reduce their support while offering helpful reminders of emotion-regulation tools when frustration levels seem too high (Murray & Rosanbalm, 2017). For example, if a teen seems frustrated with a challenging homework assignment and is about to give up, a caregiver might remind them of the value of taking a short break, eating a snack, and then breaking the homework down into smaller steps.

Positive peer relationships are also an important predictor for, and outcome of, good self-regulation skills, including emotional self-regulation. This influence also goes both ways. Teens who exhibit strong self-regulation skills have been found to form caring, close friendships with peers. In turn, these close peer relations can help to support and reinforce self-regulation (Scholte & Van Aken, 2006; Meldrum & Hay, 2012).

Self-Concept and Self-Esteem

Our self-concept is the mental image or representation we have of ourselves, the cognitive portion of identity. During adolescence, it goes beyond the tangible descriptions of middle childhood (like "dog lover" or "middle child") to encompass abstract qualities like "fair" and "loyal." Teens develop their self-concept by comparing their qualities with others' characteristics and abilities (Harter, 2006). For example, a fifteen-year-old might pride herself on being "trustworthy" and "hard working." She judges herself to be as trustworthy as her best friend; she believes she works far harder than most peers in her classes.

The dimensions of the self-concept, as outlined by Harter (1983), are scholastic competence, social acceptance, athletic competence, physical appearance, behavioral conduct, and self-acceptance. By the end of adolescence, they have been built into a coherent whole that informs an overall identity. Longitudinal research

on children suggests self-concept is relatively stable from middle childhood to middle adolescence (Kuzucu, et al., 2014), which may be a result of peer perception and niche-picking. For example, once a ten-year-old demonstrates athletic prowess, peers will likely continue to react to this by encouraging the child to join their team during athletic games, reinforcing this part of the self-concept (peer perception). Likewise, someone who discovers they are good at a skill or activity will likely seek situations that support it (niche-picking). Encouraging adolescents to try out new opportunities can help them to discover new interests, skills, and parts of their self-concept.

If self-concept is the cognitive understanding of our self, self-esteem is the motivational and emotional piece (Harter & Whitesell, 2003). Numerous studies have found a link between low self-esteem and risks of developing depression (Masselink et al., 2018; Nelis & Bukowski, 2019). Adolescents with low self-esteem have been found to have a smaller group of friends who can offer social support, and to show social adjustment problems (Marshall et al., 2014).

Overall, however, self-esteem rises over the course of adolescence, and the factors most likely to predict positive self-esteem at a later age include positive parental relationships, healthy physical activity, and positive body image (Birkeland et al., 2012). No clear sex differences in average levels of self-esteem have been reported (Masselink et al., 2017). Healthy self-esteem and a sense of mastery can be enhanced by practicing strategies like mindfulness and self-compassion (Marshall et al., 2015). Positive reinforcement, supportive feedback, and encouragement of self-discovery and physical activity can also help.

Body Image

Physical appearance is one of the main dimensions of self-concept. Our mental image or representation of our body is our **body image** and is closely related to self-esteem. Given the rapid physical development of adolescence, and the social environment's ever-changing response to these developments, body image becomes a major psychological feature of the adolescent experience (Figure 10.6). If someone's body image is healthy, their mental representation of their body size and shape is healthy and positive. An unhealthy body image is just the opposite: the person's view of their body does not match objective reality and contains negative self-evaluations (Engeln, 2017; Voelker et al., 2015).

(a) (b)

FIGURE 10.6 Beginning new body care rituals, like (a) shaving or (b) using cosmetics, can be common ways adolescents attempt to fit in, maintain a certain body image, or work to develop a body image that matches their new life stage. (credit a: modification of work "Brotherly Supervision" by Alan Antiporda/Flickr, CC BY 2.0; credit b: modification of work "A Look in the Mirror" by "Hamner_Fotos"/Flickr, CC BY 2.0)

All adolescents are susceptible to the development of an unhealthy body image. The timing of puberty is particularly influential to this because cultural ideals for physical beauty can heighten a teen's sense of being on time or off-track for physical development relative to peers and cultural expectations. For early-maturing adolescent females in the United States, for example, breast and hip development may differ from beauty standards of a thin or athletic body shape (Lee & Styne, 2013; Uhlmann et al., 2018). For both adolescent males

and females, early maturation is linked to a variety of negative psychological, social, and health outcomes (Hoyt et al., 2020). This includes being more likely to engage in risky health behaviors like experimenting with drugs and higher risks of depressive symptoms both in adolescence and in young adulthood.

Research on teen body image highlights the interplay among media exposure, cultural values, and individual factors shaping body image perceptions in different racial and ethnic groups. For instance, among Latina girls living in the United States, frequent viewing of mainstream television is linked to decreased body satisfaction, while viewing of Black-oriented television improves body satisfaction for Latina girls who have adopted more U.S. cultural beliefs (Schooler, 2008). Black adolescent girls' exposure to stereotypical media images of Black women predicted more negative interpretations and impacts of these images, particularly when racial identity was low (Jean et al., 2022). This may indicate that having a strong racial identity may protect some adolescents from the harmful influences of negative media images on body image. Asian American girls' body image perceptions are influenced by both mainstream White culture and Asian culture, which can lead to disordered eating and a lower likelihood of receiving treatment for eating disorders (Javier et al., 2019). In a study of Chinese teenagers, girls were generally more unhappy with their gender and physical appearance, while boys were more unhappy with their sexual organs (Zhang et al., 2020). Overall, many contextual influences and individual differences interact to shape an adolescent's body image.

LINK TO LEARNING

Watch this clip to learn more about a school in East London is the first to start lessons using a Body Confidence Campaign Toolkit (https://openstax.org/r/104BodyConfiden) to help schoolchildren develop healthy confidence in their bodies.

Information that contributes to adolescents' body image comes from peers, family members, television and movies, advertisements, and social media. The Surgeon General of the United States recently published an advisory for parents, educators, and practitioners warning of the dangers of social media use by adolescents (Office of the U.S. Surgeon General, 2023). It notes a particular concern for adolescent girls, citing an increase in the risk for developing a negative body image and eating disorders (Holland & Tiggemann, 2016). Parents' words, attitudes, and behaviors related to health, diet, exercise, and physical development contribute to teens' sense of their physical selves, and mothers play a significant role in their teenage daughters' views (Helfert & Warschburger, 2011; Neumark-Sztainer, et al., 2010). Peers provide feedback about which body types are valued and how someone is doing relative to those standards.

LIFE HACKS

Promoting a Healthy Body Image

What can we do to encourage a healthy body image in adolescents? Caregivers can start with developing their own healthy body image so they can better model healthy behaviors, emotions, and thoughts for their children (Jensen et al., 2018). Similarly, adults can embrace and encourage body diversity, the idea that our physical diversity is good, and that people all have different strengths. Further, teaching children about media literacy and critically analyzing media messages builds a good set of lifelong skills, helping children counteract negative information about beauty ideals as represented in the media. Finally, one counter intuitive but important recommendation is to avoid saying positive things about someone based solely on notions of physical beauty. By praising someone for their physicality alone, adults are inadvertently signaling that this matters above other characteristics like personality, intelligence, or talents. Instead, praise desirable characteristics and effort.

Here are some other tips for promoting healthy body image:

1. Avoid making comments about your weight or the weight of others, especially around children and teens (Neumark-Sztainer et al., 2010). In addition, avoid making negative comments about your own body.

2. Promote media literacy by talking about media representations that may model an unhealthy body image. If a character in a show says negative things about their own body or another person's body, caregivers can use that as an opportunity to talk about how to interpret media messages.
3. Engage in healthy behaviors at home to maintain a healthy body, including a good diet and exercise habits. Be careful though—it's better to frame your workout and nutrition choices as being to "stay strong" or "stay healthy" rather than talk about specific beauty or weight goals.
4. If you catch yourself saying something negative about your body, other bodies, or promoting an unhealthy diet—make it right. You can point out that you made a mistake, apologize, and note that you. should do better with being body positive—for your own well-being and the well-being of others.

LINK TO LEARNING

Watch this clip of actors depicting a non-judgmental parent-teen conversation (https://openstax.org/r/104BodyPositivy) about body positivity, followed by some tips about having such conversations from a nutritionist.

References

Akinnawo, E. O., Akpunne, B. C., & Olufunmilayo, O. (2019). Parenting style, emotional intelligence and psychological health of Nigerian children. *Asian Journal of Pediatric Research, 2*(2), 1–11. https://www.researchgate.net/publication/332118712_Parenting_Style_Emotional_Intelligence_and_Psychological_Health_of_Nigerian_Children

Alina, S., Olena, L., & Mykola, K. (2021). Emotional intelligence of teenagers as a prerequisite for their professional determination. *Psychologival sciences perspectives of development of science and practice*, Prague, Czech Republic. (pp. 458–460). https://elibrary.kubg.edu.ua/id/eprint/40016

Banyard, V., Mitchell, K. J., Waterman, E. A., Rizzo, A. J., & Edwards, K. M. (2020). Context matters: Reactive and proactive bystander action to prevent sexual and dating violence in high schools. *Journal of School Violence, 19*(4), 499–511.https://doi.org/10.1080/15388220.2020.1752221

Baumeister, R. F., & Alquist, J. L. (2009). Is there a downside to good self-control? *Self and Identity, 8*(2–3), 115–130. https://doi.org/10.1080/15298860802501474

Birkeland, M. S., Melkevik, O., Holsen, I., & Wold, B. (2012). Trajectories of global self-esteem development during adolescence. *Journal of Adolescence, 35*(1), 43–54.

Collado-Soler, R., Trigueros, R., Aguilar-Parra, J. M., & Navarro, N. (2023). Emotional intelligence and resilience outcomes in adolescent period, is knowledge really strength? *Psychology Research and Behavior Management, 16*, 1365–1378. https://doi.org/10.2147/PRBM.S383296

Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). *Emotion in the human face: Guidelines for research and an integration of findings*. Pergamon Press.

Engeln, R. S. (2017). *Beauty sick: How the cultural obsession with appearance hurts girls and women*. Harper. https://www.researchgate.net/publication/316734598_Beauty_Sick_How_the_Cultural_Obsession_with_Appearance_Hurts_Girls_and_Women

Erikson, E. H. (1970). Autobiographic notes on the identity crisis. Daedalus, 99(4), 730–759. https://psycnet.apa.org/record/1971-24940-001

Farley, J. P., & Kim-Spoon, J. (2014). The development of adolescent self-regulation: Reviewing the role of parent, peer, friend, and romantic relationships. *Journal of Adolescence, 37*(4), 433–440. https://doi.org/10.1016/j.adolescence.2014.03.009

Goleman, D. (1998). *Working with emotional intelligence*. Bantam Books.

Harter, S. (1983). Development perspectives on the self-system. In Hetherington E. M. (Ed.), *Handbook of child psychology, vol. 4: socialization, personality, and social development*. Wiley. https://api.semanticscholar.org/CorpusID:143903129

Harter, S. (2006). The development of self-esteem. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 144–150). Psychology Press. https://psycnet.apa.org/record/2006-12386-018

Harter, S., & Whitesell, N. R. (2003). Beyond the debate: Why some adolescents report stable self-worth over time and situation, whereas others report changes in self-worth. *Journal of Personality, 71*(6), 1027–1058. https://doi.org/10.1111/1467-6494.7106006

Helfert, S., & Warschburger, P. (2011). A prospective study on the impact of peer and parental pressure on body dissatisfaction in adolescent girls and boys. *Body Image, 8*(2), 101–109.

Holland, G.,& Tiggemann, M. A. (2016). A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image17,* 100–10. https://doi.org/10.1016/j.bodyim.2016.02.008

Hoyt, L. T., Niu, L., Pachucki, M. C., & Chaku, N. (2020). Timing of puberty in boys and girls: Implications for population health. *SSM Popul Health, 10*, 100549. https://doi.org/10.1016/j.ssmph.2020.100549

Javier, S. J., & Belgrave, F. Z. (2019). "I'm not White, I have to be pretty and skinny": A qualitative exploration of body image and eating disorders among Asian American women. *Asian American Journal of Psychology, 10*(2), 141–153. https://doi.org/10.1037/aap0000133

Jean, E. A., Neal-Barnett, A., & Stadulis, R. (2022). How we see us: An examination of factors shaping the appraisal of stereotypical media images of Black women among Black adolescent girls. *Sex Roles, 86,* 334–345. https://doi.org/10.1007/s11199-021-01269-8

Jensen, M., Savoie-Roskos, M. R., Neid-Avila, J., & Bingeman, B. (2022). Tips to encourage a healthy body image in your child. [Fact sheet]. Utah State University. https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=2879&context=extension_curall

Kuzucu, Y., Bontempo, D. E., Hofer, S. M., Stallings, M. C., & Piccinin, A. M. (2014). Developmental change and time-specific variation in global and specific aspects of self-concept in adolescence and association with depressive symptoms. *The Journal of Early Adolescence, 34*(5), 638–666. https://doi.org/10.1177/0272431613507498

Lee, Y., & Styne, D. (2013). Influences on the onset and tempo of puberty in human beings and implications for adolescent psychological development. *Hormones and Behavior, 64*(2), 250–261. https://doi.org/10.1016/j.yhbeh.2013.03.014

Marshall, S. L., Parker, P. D., Ciarrochi, J., Sahdra, B., Jackson, C. J., & Heaven, P. C. L. (2015). Self-compassion protects against the negative effects of low self-esteem: A longitudinal study in a large adolescent sample. *Personality and Individual Differences, 74*, 116–121. https://doi.org/10.1016/j.paid.2014.09.013

Masselink, M., Van Roekel, E., Oldehinkel, A. J. (2018). Self-esteem in early adolescence as predictor of depressive symptoms in late adolescence and early adulthood: The mediating role of motivational and social factors. *Journal of Youth and Adolescence, 47*(5), 932–946. https://doi.org/10.1007/s10964-017-0727-z

McClelland, M., Geldhof, J., Morrison, F., Gestsdóttir, S., Cameron, C., Bowers, E., Duckworth, A., Little, T., & Grammer, J. (2017). Self-regulation. In N. Halfon, C. B. Forrest, R., M. Lerner, et al. (Eds.), *Handbook of life course health development* (pp. 275–298.) https://www.ncbi.nlm.nih.gov/books/NBK543706/

Meldrum, R. C., & Hay, C. (2012). Do peers matter in the development of self-control? Evidence from a longitudinal study of youth. *Journal of Youth and Adolescence, 41*(6), 691–703. https://doi.org/10.1007/s10964-011-9692-0

Miller, P. H. (2011). *Theories of developmental psychology* (5th ed.). Worth.

Moilanen, K. L., Rasmussen, K. E., & Padilla-Walker, L. M. (2015). Bidirectional associations between self-regulation and parenting styles in early adolescence. *Journal of Research on Adolescence, 25*(2), 246–262. https://doi.org/10.1111/jora.12125

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin, 126*(2), 247–259. https://doi.org/10.1037/0033-2909.126.2.247

Murray, D. W., & Rosanbalm, K. (2017). Promoting self-regulation in adolescents and young adults: A practice brief. Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. https://www.acf.hhs.gov/sites/default/files/documents/opre/5_adol_508_reduced_0.pdf

Nastas, L.-E., & Sala, K. (2012). Adolescents' emotional intelligence and parental styles. *Procedia - Social and Behavioral Sciences, 33*, 478–482. https://doi.org/

10.1016/j.sbspro.2012.01.167
Nelis, S., & Bukowski, W. M. (2019). Daily affect and self-esteem in early adolescence: Correlates of mean levels and within-person variability. *Psychologica Belgica, 59*(1), 96–115. https://doi.org/10.5334/pb.467
Neumark-Sztainer, D., Bauer, K. W., Friend, S., Hannan, P. J., Story, M., & Berge, J. M. (2010). Family weight talk and dieting: how much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *Journal of Adolescent Health, 47*(3), 270–276. https://doi.org/10.1016/j.jadohealth.2010.02.001
Nguyen, Q.-A. N., Tran, T. D., Tran, T. T., Nguyen, T. A., & Fisher, J. (2020). Perceived parenting styles and emotional intelligence among adolescents in Vietnam. *The Family Journal, 28*(4), 441–454. http://dx.doi.org/10.1177/1066480719896558
Office of the U.S. Surgeon General. (2023). *Social media and youth mental health.* The U.S. Surgeon General's Advisory, U.S. Department of Health and Human Services. https://www.hhs.gov/surgeongeneral/priorities/youth-mental-health/social-media/index.html
Reyes-Wapano, M. R. (2021). Does parenting style predict emotional intelligence? *International Journal of Research and Innovation in Social Science, 5*(7), 649–657. https://www.rsisinternational.org/journals/ijriss/Digital-Library/volume-5-issue-7/649-657.pdf
Scherer, K. R. (1997). The role of culture in emotion-antecedent appraisal. *Journal of Personality and Social Psychology, 73*(5), 902–922. https://doi.org/10.1037/0022-3514.73.5.902
Schooler, D. (2008). Real women have curves: A longitudinal investigation of tv and the body image development of Latina adolescents. *Journal of Adolescent Research, 23*(2), 132–153. https://doi.org/10.1177/0743558407310712
Scholte, R. H., & van Aken, M. A. (2006). Peer relations in adolescence. In S. Jackson & L. Goossens (Eds.), *Handbook of adolescent development* (pp. 175–199). Psychology Press. https://psycnet.apa.org/record/2006-13178-010
Uhlmann, L. R., Donovan, C. L., Zimmer-Gembeck, M. J., Bell, H. S., & Ramme, R. A. (2018). The fit beauty ideal: A healthy alternative to thinness or a wolf in sheep's clothing? *Body Image, 25*, 23–30. https://doi.org/10.1016/j.bodyim.2018.01.005
Voelker, D.K., Reel, J. J., & Greenleaf, C. (2015). Weight status and body image perceptions in adolescents: Current perspectives. *Adolescent Health, Medicine and Therapeutics, 6,* 149–158. https://doi.org/10.2147%2FAHMT.S68344
Zhang, Y., Li, T., Yao, R., Han, H., Wu, L., Wu, X., Huaiquan, G., Sun, L., & Fu, L. (2020). Comparison of body-image dissatisfaction among Chinese children and adolescents at different pubertal development stages. *Psychology Research and Behavior Management, 13,* 555–562.

10.3 Identity and Culture: Race/Ethnicity, Gender, and Sexuality in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the development of ethnic and multicultural identity during adolescence
- Discuss how adolescents can develop a bi/multiracial identity
- Outline the process of developing a gender identity in adolescence
- Describe the development of sexual orientation during adolescence

Sixteen-year-old Taylor looked forward to finally being a junior at their high school. The course choices open to upperclass students were more interesting and offered the opportunity to engage more closely with peers who shared similar interests. Taylor generally got along with the various cliques at school, and their closest friends were connections developed over the past few years. This included soccer teammates, lunch buddies (one of whom Taylor had a crush on), some gaming friends, and fellow Hmong students involved in the Hmong student club. Taylor's experiences with these various relationships and contexts serve an important role in establishing their identity at this stage of life.

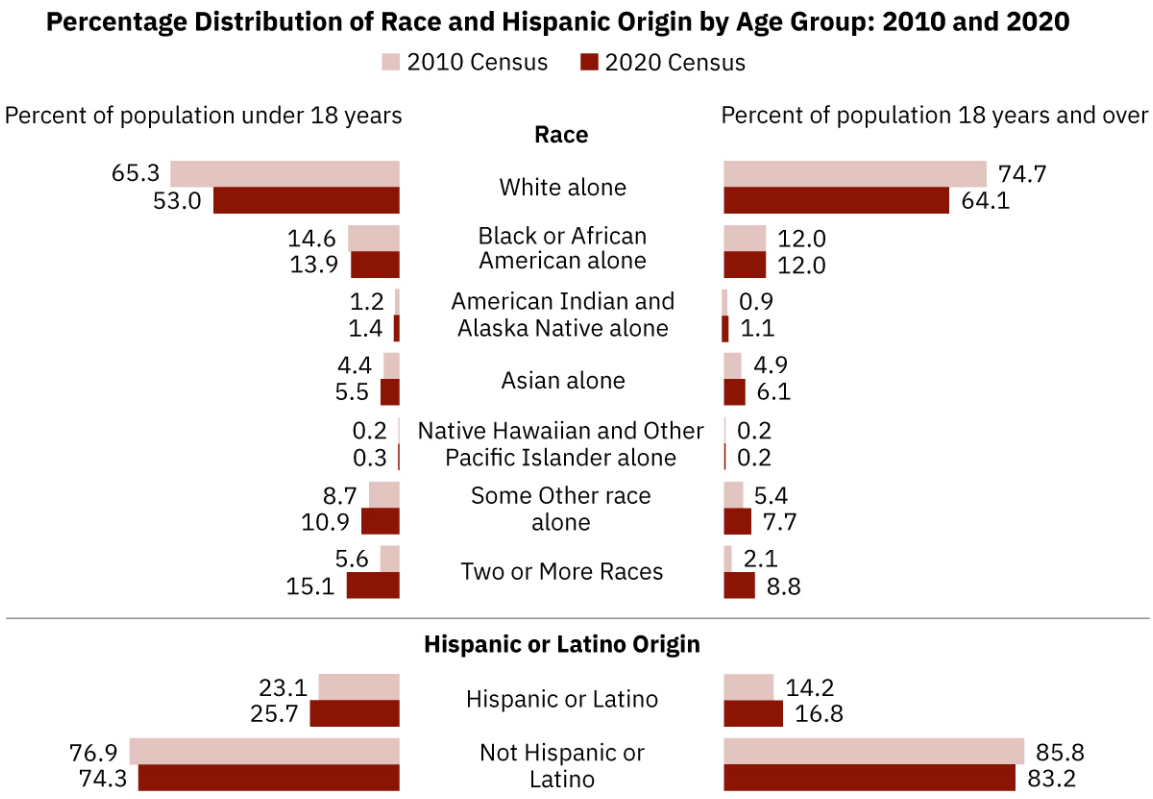
Many social interactions are informed by our own and others' expectations based on perceived racial and ethnic identity, gender identity, and sexual orientation and identity. Thus, a key part of healthy adolescence is searching for our own identity by exploring these areas.

Racial and Ethnic Identity Development in Adolescence

Our **cultural heritage** consists of adaptations to the natural and social world that have shared meaning and are passed from generation to generation (Cohen, 2009). Our *ethnicity* derives from our cultural heritage. *Race*, in contrast, is a socially created construct that often incorporates elements of cultural heritage. (Revisit 1.4 Contexts and Settings of Development to review the overlaps and distinctions between race, ethnicity, and culture.) Learning about and incorporating our cultural heritage into our sense of self is part of the multifaceted achievement of identity.

The demographics of any country's population are always changing. In the United States, the 2020 census revealed that the overall size of many ethnoracial minority groups is increasing, especially among youth (Figure 10.7). According to the census, only 53 percent of those under age eighteen years were reported as "White alone" as their race, compared with 64.1 percent of adults. Black or African American children make up 13.9 percent of the U.S. population, Asian American children 5.5 percent, and American Indian and Alaska Native children 1.4 percent, and fully 15.1 percent of all children identified as being of two or more races. More than one-quarter of all children report having Hispanic or Latino heritage, compared with 16.8 percent of the adult population (U.S Census Bureau, 2020).[1]

1 This study (U.S. Census Bureau, 2020) uses the terms "White alone," "Black or African American alone," "American Indian and



Note: Data users should use caution when comparing 2010 Census and 2020 Census race data because of improvements to the question design, data processing, and coding procedures for the 2020 Census.

Source: U.S. Census Bureau, 2010 Census Redistricting Data (Public Law 94-171) Summary File; 2020 Census Redistricting Data (Public Law 94-171) Summary File.

FIGURE 10.7 Census data illustrate the percentage of various race and ethnic groups in different age groups. Note the differences between 2010 and 2020. (credit: modification of work "Figure 5. Percentage Distribution of Race and Hispanic Origin by Age Group: 2010 and 2020" by U.S. Census Bureau/United States Census Bureau, Public Domain)

These figures point out the value of specific developmental theories and trajectories for adolescents from non-White backgrounds. They also show the irony of using the term "minority" to describe the ethnoracial composition of the United States. Of course, the term "minority" refers to more than just population counts. That is, when people talk about minority or majority groups in psychology, they refer to both the numbers and the opportunities each group has. Similarly, when discussing equity, diversity, and inclusion (EDI), it usually means efforts to ensure all groups have equal chances and access, no matter whether they are a majority or minority group status. For example, research on African American, Asian American, and Latinx adolescents shows that these students experience more regular ethnic/racial discrimination, such as in school, which results in more negative mood and poorer mental health (Del Toro et al., 2024).[2] These experiences are often due to systemic issues like racial bias and may lead to fewer opportunities in adulthood including lower wages and fewer promotion opportunities. However, this research study also showed how resilience was quite likely when adolescents received more culturally inclusive socialization (Del Toro et al., 2024).

Research shows that the development of a positive ethnic or racial identity in teens leads to higher self-esteem, better mental health, and greater resilience against discrimination (Rivas-Drake et al., 2014). This positive identity fosters a sense of belonging and empowerment.

Alaska Native alone," "Asian alone," "Native Hawaiian and Other Pacific Islander alone," "Some Other Race alone," and "Two or More Races" as categories for "race"; it uses the terms "Hispanic or Latino" and "Not Hispanic or Latino" as categories for "Hispanic or Latino Origin."

2 This study (Del Toro et al., 2024) uses the terms "African American," "Asian American," and "Latinx."

The Benefits of Positive Ethnic or Racial Identity Development

The term "ethnoracial" highlights the unique racial experiences of individuals within an ethnicity. Black, White, Asian, and Indigenous Latinés each have distinct racial experiences, as do all individuals within each of these groups (Sandoval, 2023; Jiménez et al., 2015). In other words, ethnoracial groups have differences both between groups and within individuals who may share the same ethnoracial identity. For a growing proportion of the adolescent population, developing a positive ethnic and/or racial identity is a critical part of healthy development (Rivas-Drake et al., 2014). A positive ethnoracial identity is one in which the adolescent acknowledges and feels connected with their community, incorporates their social group into their self-concept, and views that part of themselves with healthy esteem. This result is associated with numerous healthy outcomes and has been shown to serve as a safeguard against discrimination (Galliher et al., 2011; Umaña-Taylor & Rivas-Drake, 2021).

For example, Umaña-Taylor and colleagues (2018) conducted a study on a high school intervention called the Identity Project, aimed at developing ethnoracial identity in youth of color. The eight-session program, which addressed identity, stereotypes, racism, and heritage, led to increased ethnoracial identity exploration and better psychological outcomes, including improved coping skills against discrimination. White adolescents may also benefit from developing a healthy ethnoracial identity even when they may be growing up in a White majority culture (Satterthwaite-Freiman & Umana-Taylor, 2023). While White is a racial term, White identities may involve overlapping aspects of cultural and/or national heritage, ethnicity, and race. Research indicates that White American adolescents may choose between a few facets of ethnoracial identity, including an American identity, a sense of connection to their European ancestry (e.g., Irish, German, or Polish ancestry), a connection to an ethnic community (e.g., a local Greek community in an American city), or a blended identity (Koutrelakos, 2013; Satterthwaite-Freiman & Umana-Taylor, 2023).

A comprehensive review of positive ethnoracial identity found that for African American youth, a positive ethnic identity leads to higher self-esteem, a more positive self-concept, higher academic achievement and engagement, decreased depressive and somatic symptoms (bodily manifestations of psychological distress), better coping and mastery, and decreased perceived stress, especially about discrimination (Rivas-Drake, et al., 2014).[3] For Latino youth, affirmation of their Latino community was associated with higher self-esteem and increased exploration of their culture and community. Such youth also exhibited fewer internalizing symptoms (like depression and anxiety) and less externalizing behavior (such as acting out in a problematic way). There were also positive influences on academic engagement, self-efficacy, and school performance.

Adolescent Development of Black Identity

Psychology researcher William Cross described an entire developmental pathway for the way Black youth achieve an identity (Cross, 1991, 1995, 2022;[4] Burrell-Craft, 2020). His theory posits a series of stages encountered in sequence, though movement back and forth between the stages is possible. Prior to adolescence, children are in the *pre-encounter phase* of racial identity formation. They internalize messages from the dominant majority culture that emphasize the majority as being positive and that view the minority culture negatively. As a result of exposure to the dominant cultural view, Black children and adolescents may distance themselves from Black culture (Gardner-Kitt & Worrell, 2007).

Adolescence marks the typical beginning of the *encounter phase*. This encounter is often a negative trigger, such as the experience of outright discrimination in the social environment adolescents are now more broadly exposed to. They begin trying to reconcile their ethnoracial identity with what they thought they knew or understood about the dominant cultural group. Often, this means turning toward their ethnoracial group and seeking to learn more about this part of themselves. This stage is called *immersion/emersion*. Black youth in this stage will begin to incorporate visible parts of their heritage into their everyday lives and find support

3 This study (Rivas-Drake et al., 2014) uses the terms "African American," "Latino," "Asian American," "Pacific Islander," and "Native American."
4 Cross' research uses the term "Black."

from other Black community members.

The immersion/emersion stage can be seen as a kind of fortifying step, in which "cultural armor" is added. Eventually, developing youth will internalize the more visible and concrete symbols of their heritage, incorporating its ideas and concepts into their own self-view. It is during this *internalization stage* that Black youth feel more comfortable connecting with allies from the dominant culture, and they may then seek positive action and justice in their lives, effectively using their strong ethnoracial identity to make a difference. For example, a Black teenager might join a school club that focuses on social justice, working alongside peers of different backgrounds to promote equality and awareness in their community.

Adolescent Development of Latino and Hispanic Identity

The Latino community is a heterogenous group, with between- and within-family differences by country of birth; heritage; and racial, indigenous, immigration, and documentation background (Pew Research Center, 2022).[5] Many Latino youths in the United States are raised in Spanish-speaking households, with varying levels of social interactions with other communities and multiple connections with both Latino and non-Latino youths (Patten, 2016; U.S. Census Bureau, 2014).

A leading theory of identity formation for Latino youth proposes not a sequence of stages, but rather a set of "orientations or lenses" (Pabón Gautier, 2016;[6] Ferdman & Gallegos, 2001[7]) that describe various degrees of identification. For example, some Latino youth raised in predominately White areas have only weak identification with their Latino heritage or background (Torres, 2003)[8]. Latinos with darker skin tones are much less likely to identify as White and more likely to identify with non-White labels like Afro-Latinx (Flores, 2023).[9] Others are "Undifferentiated," accepting the dominant culture and adopting *colorblindness* as a stance. That is, they focus on the similarities among ethnoracial groups and claim not to recognize either positive or negative qualities based on ethnicity or race (Ferdman & Gallegos, 2001). A Pew Research Center survey by Gonzales-Barrera (2019)[10] found that light-skinned Hispanic people had similar experiences with discrimination as non-Hispanic White people. Around 25 percent of both groups reported feeling that others were suspicious of them, and about 20 percent said they faced unfair treatment in pay or hiring. About half the Hispanic respondents identified as White, with 68 percent of those with the lightest skin tones doing so. While skin tone affected the way Hispanic people were treated, for Black people, discrimination was more influenced by factors like gender and education level.

Other lenses include "Latino as Other," meaning the individual views themselves generically as Latino with no specific country or cultural connection, and "Subgroup Identified," whose members accept a regional subgroup identification (Central American, for example) (Ferdman & Gallegos, 2001). Finally, those who fully acknowledge and accept their specific Latino heritage, "Latino Identified," and those who take a more change-oriented "Latino Integrated" view, show full achievement of a Latino identity, and an understanding of the racial structure of society and of ways to push back and challenge these structures (Ferdman & Gallegos, 2001).

You might note a similarity between these lenses and Cross's Black Identity Development model. For example, a teenager who identifies as Afro-Latino might embrace both their African and Latino heritage, actively participating in cultural events from both backgrounds and challenging stereotypes. Latino identity is multifaceted and influenced by a combination of cultural, racial, and societal factors, emphasizing the importance of understanding and respecting this diversity within the community.

5 This study (Pew Research Center, 2022) uses the terms "Hispanic" and "Latino."
6 This study (Pabon Gautier, 2016) uses the term "Latino."
7 This study (Ferdman & Gallegos, 2001) uses the term "Latino."
8 This study (Torres, 2003) uses the term "Latino."
9 This study (Flores, 2023) uses "Latinx" as a broad term as it explores many identities and associated terms for those identities including "Latino," "Latine," "Hispanic," "Afro-Latino," "Afro-Hispanic," and others. The author notes that the terms "Latine," "Latinx," and "Latino" are used interchangeably in the paper.
10 This study (Gonzales-Barrera, 2019) uses the term "Hispanic."

FIGURE 10.8 Navigating the identities and terms associated with Hispanic and Latino identity is complex. (credit: modification of work "3402/vintage" by nappy/CC0 1.0)

LINK TO LEARNING

What is Afro-Latino? This video explores the cultural impact of identity (https://openstax.org/r/104CutrlImpctID) at the intersection of two minorities (Black and Latino).

Adolescent Development of Asian American and Pacific Islander Identity

The 2020 U.S. Census counted 20.6 million individuals who identified as having Asian, Native Hawaiian, or Pacific Islander heritage, representing 6.2 percent of the overall U.S. population (U.S. Census Bureau, 2020). Statistics Canada reports over seven million Asian Canadians, or 19.3 percent of Canada's population (Statistics Canada, 2024).

Psychiatrist Jean Kim (Kim, 1981, 2001; Choi, 2021; Woo et al., 2020) identified a model that envisions the process of Asian American ethnic identity formation along a continuum, from early childhood through adolescence and into adulthood. Individuals begin by becoming aware of an Asian American ethnicity, and much of the process takes place via interactions with parents and community members. Children are sensitive to both positive and negative messages, conveyed both outright and informally in these interactions.

According to Kim (1981, 2001), as they begin formal schooling, Asian American children tend to enter a *White identification stage*. They encounter attitudes toward Asian-Americans, including prejudices, through interactions with peers and the school environment. Ethnic and racial discrimination and social ranking greatly shape the way minority youth experience being part of a minority. As a result, they frequently choose to (temporarily) minimize their ethnic heritage and identify with the dominant White culture.

You've learned about the increased cognitive skill set that comes with the development of formal operations in children, and the increased opportunities for social interaction afforded by an adolescent's rich and complex social environment. Together these tend to lead to an awakening to social and political consciousness for Asian American youth. The trigger is often the awareness of long-standing prejudices and oppression of minority groups, including their own. This is consistent with what researchers have seen with other ethnic identity models—the impetus to develop an ethnic identity often arises from a negative encounter with the dominant ethnic group (Cross et al., 2022; Sellers et al., 2006).

The result, according to Kim (1981, 2001), is a decreased desire to identify with the White majority group, and a *redirection stage* wherein Asian American adolescents search for knowledge about their ethnic heritage. There is often a sense of anger about the dominant White culture during this search. Finally, adolescents arrive at an *incorporation stage*: adoption of a positive view of themselves as Asian American and a level of comfort

with this aspect of their identity. Notably, anger, distancing from, and even longing to identify with White-dominant culture have faded as the teen or young adult embraces their Asian American identity.

American Indian and Alaska Native (AI/AN) Identity Development in Youth

U.S. Census Bureau statistics reveal that from 2017 to 2021, 2.7 million U.S. residents identified solely as American Indian and Alaska Native (AI/AN), while 6.3 million identified as AI/AN alone or in combination with other races. Among those aged five years and older, 32.1 percent spoke a non-English language at home, and 58.9 percent of those age sixteen years and over were part of the labor force (U.S. Census Bureau, 2023).[11]

For Alaskan Natives, cultural identity may be described by youth as including components of self, family, community, tribe, region or place, cultural values and beliefs, and historical knowledge (Buckingham & Hutchinson, 2022). Cultural identity is often understood by using cultural practices and values as well as an awareness of the historical strengths, challenges, and resilience of Alaskan natives. This may include developing a narrative and cultural and historical awareness around experiences of colonization (Buckingham & Hutchinson, 2022). Additionally, some university programs have shown progress in creating empowering communities that draw from storytelling and elder wisdom to promote cultural identity in Alaskan natives (Buckingham et al., 2023). In particular, promoting cultural identity and empowerment at the microsystem level (e.g., small community groups) is likely to be beneficial to fostering Alaska Native cultural identity (Buckingham & Hutchinson, 2022; Buckingham et al., 2023).

Walters (1999)[12] suggested a model for urban American Indian cultural identity development, where individuals move from internalizing negative stereotypes, to feeling marginalized between two cultures, to rejecting colonization's negative impacts, and finally to having a strong and resilient American Indian identity. A study with urban American Indian adults showed they often started by rejecting their Native identity and ended up embracing it healthily (Lucero, 2010).[13] Kulis and colleagues (2013)[14] found that urban American Indian youth who felt strongly connected to their Indigenous background participated more in traditional cultural practices. In another study, House and colleagues (2006)[15] found that urban American Indian children and adults talked about urban-rural tension, cultural pride, and intergenerational trauma from relocation, which influenced their identity. Thus, American Indian youth often move from internalizing negative stereotypes to embracing a resilient cultural identity, with connections to traditional practices and awareness of intergenerational trauma influencing their identity development.

The lack of Native American representation in modern media affects this group's identity and self-understanding. When represented, Native Americans are often portrayed as outdated figures or negative stereotypes, limiting the perception of what they can achieve in today's society. Leavitt et al., (2015)[16] noted that the lack of representation in the media harms Native American youths' self-understanding by making their identities all seem the same, creating limited and narrow identity examples, and leading to loss of individuality and self-stereotyping among Native American teenagers today. Further, policymakers and educators should support schools in avoiding harmful and negative representations, like mascots, that stereotype and potentially harm Native American students.

Biracial or Multiracial Ethnic Identity

A growing number of individuals are members of two or more ethnic groups. Carlos Poston (1990)[17] put forth a model of biracial ethnic development that shows the complex and active search for information about their ethnic heritage that biracial adolescents may undergo.

11 This study (U.S. Census Bureau, 2023) uses the terms "American Indian" and "Alaska Native."
12 This study (Walter, 1999) uses the term "American Indian."
13 This study (Lucero, 2010) uses the term "American Indian."
14 This study (Kulis et al., 2013) uses the term "American Indian" and focuses on the southwest U.S.
15 This study (House et al., 2006) uses the term "American Indian" and focuses on the southwest U.S.
16 This study (Leavitt et al., 2015) uses the term "Native American."
17 Poston's (Carlos Poston, 1990) research uses the term "biracial."

In Poston's model, biracial ethnic identity formation begins with the individual's feeling a need to choose one ethnic group over the other. For example, an Afro-Caribbean teen whose family has immigrated from Jamaica to the United States may feel the need to first identify with her Black ethnoracial identity and de-emphasize her Caribbean heritage. Alternatively, they may feel the need to first identify with their Caribbean heritage while de-emphasizing their Black ethnoracial identity. Choosing one ethnicity over the other may simplify the cultural learning that forms the basis of identity formation. Later, as the model points out, the teen may experience a sense of guilt for exclusively embracing just one aspect of their ethnoracial heritage, often leading to reexamination and further exploration of the other. The end of the process of biracial identity formation often brings a growing appreciation of the benefits of adopting multiple ethnic identities, including a sense of belonging and connection with the person's heritage (Poston, 1990). Identity formation is complete when the adolescent works to integrate both (or more) sets of cultural knowledge and identities into a coherent whole.

One potential benefit of being bi- or multiracial is code-switching, the ability to change our perspective and behavior to match the demands of our current cultural environment.

Code-switching can include changing hairstyle, speech, or name or downplaying cultural identity to avoid negative stereotypes (Hutton, 2022). For example, someone might switch between formal and casual language depending on who they're with. But code-switching can be exhausting (Johnson et al., 2021) and make someone feel they must change who they are to be accepted. Creating inclusive environments that embrace diversity and encourage alliance can help minimize the need.

LINK TO LEARNING

This video shares the experiences of people who code-switch (https://openstax.org/r/104CodeSwitch) to succeed in the larger culture, especially their workplaces.

Gender Identity in Adolescence

Gender is a major component of self-concept and a major part of our overall identity. Recall that sex is assigned based on features of biological anatomy and physiology, and it can be male, female, or intersex, while gender consists of society's ideas about the roles, attitudes, and behaviors associated with each sex assignment. Gender identity is our own psychological sense and acceptance of our particular gender. The way we label our gender identity is also related to whether it conforms to society's expectations based on sex assignment, denoted as "cis" if it conforms to those expectations, or "trans" if it is nonconforming.

Ideas about sex and gender constitute some of the earliest social influences on our development, and individuals enter adolescence with an abundance of information about gender and gender norms. For many, gender identity follows from a sense of congruence among their physical sexual characteristics, their assigned gender at birth based on those sexual characteristics, and a childhood of socially reinforced gender-conforming behaviors (Diamond & Butterworth, 2008; Steensma, et al., 2013).

The **gender intensification hypothesis** (Hill & Lynch, 1983) posits that pressures to conform to gender roles intensify during adolescence, leading to increased self-consciousness and lower self-esteem in girls than in boys. In many European societies, boys are encouraged to demonstrate autonomy, self-assertion, and dominance, while girls are typically taught to prioritize kindness, caring, compassion, and a focus on others (Kollmayer et al., 2018). This study found that fathers' gender-role identities influenced these dynamics; traditional fathers discouraged autonomy in daughters, while egalitarian fathers encouraged it. Fathers of sons were less likely to closely monitor their sons, thereby allowing for more autonomy.

Researchers have also investigated the way gender roles develop in families in childhood through adolescence (Shanahan et al., 2007; Crouter et al., 2007). They found that the chores performed by boys and girls became more gender-specific over time, especially in families that adhered to traditional gender roles. In childhood

and adolescence, youth also spent more time with the same-gender parent, particularly if they had different-gender siblings. Girls reported feeling more warmth from their mothers and less from their fathers than their brothers reported. Attitudes toward gender roles changed differently for boys and girls as they grew older, influenced by family context and individual characteristics. Girls became less traditional, while boys initially became less traditional but then became more traditional later.

Another study explored whether adolescents became more gender-stereotypical, and whether doing so predicted depression (Priess et al., 2009). Girls reported higher stereotypical femininity than boys, but no increase in stereotypical gender traits was found over time. Higher stereotypical masculinity in both girls and boys predicted fewer depressive symptoms, especially under moderate stress (Priess et al., 2009). These changes mostly happened during the transition to adolescence.

A recent study used the gender identity theory to explore cultural interest differences between different-gendered adolescents. A sample of Flemish adolescents found that identifying strongly with traditional gender roles and feeling pressure to conform led girls to have more interest in arts and literature, while boys had much less interest (Lagaert et al., 2017). Gender identity and social pressures may reinforce gender-specific cultural preferences.

A feeling of mismatch or discontent with their socially assigned gender serves as the impetus for some adolescents to begin exploration of gender identity (Steensma, et al., 2013). This discontent is likely amplified by the dramatic hormonal and bodily changes that occur during puberty for all adolescents. The developing adolescent's new reasoning skills also strengthen their ability to question the status quo and imagine what is possible. The increased number of social interactions, especially with peers, also gives the developing individual many opportunities for social comparison, modeling, and feedback.

Behavior does not match society's expectations for our assigned gender is gender nonconforming behavior. For instance, a boy wearing a skirt, makeup, and nail polish may be considered **gender nonconforming** in a culture or community where skirts, makeup, and nail polish are associated with femininity. Some adolescents explore their gender by trying out new roles and personal styles, much as they undergo a process of exploration and commitment in their overall identity. However, there are many other ways adolescents may explore and commit to a gender identity, including seeking support from health-care providers. Gender nonconforming youth may also benefit from support from health-care professionals particularly as they are at a higher risk of peer victimization. One study of Thai students found that female adolescents and gender nonconforming female adolescents were at a higher risk of social and sexual victimization which in turn increased risks of depression (Cheung et al., 2020).

The formation of gender identity is an important process for transgender and gender nonconforming youth. This process often begins with a sense of incongruence between the gender identity an individual was assigned at birth and their experienced sense of gender identity in early and/or middle childhood (Zaliznyak et al., 2021; Oh et al., 2024). Adolescence and early adulthood represent a pivotal time in gender identity formation, often culminating in a variety of different gender-affirming choices in establishing identity (Oh et al., 2024). These choices vary but may include a combination of socioemotional, legal, medical, surgical, and non-surgical pathways to establishing an identity that will promote wellbeing and long term mental health (Oh et al., 2024; Katz-Wise et al., 2017). Early support for and knowledge of gender identity development, including gender-affirming care, lead to improved quality of life and the healthy development of gender identity as adolescents mature (Oh et al., 2024; Katz-Wise et al., 2017).

About 25 percent of the world's languages assign each noun a gender: masculine, feminine, or neuter. However, some cultures go beyond the binary view and acknowledge, for example, the *hijra* in India, *two-spirit* in some Native American tribes, and *men-women* in Balkan communities (Turban et al., 2018). Cultural changes in the United States have yielded greater awareness of gender possibilities and brought youth a bit more freedom to explore and choose among man, woman, nonbinary, cisgender, transgender, genderfluid, and agender.

LINK TO LEARNING

Explore the concept of gender identity (https://openstax.org/r/104GenderID) with the Trevor Project. Here you will find clear and concise definitions to help you understand the spectrum of gender identities.

Sexual Orientation in Adolescence

Another important aspect of identity development in adolescence is sexual orientation—the sex of those to whom we are sexually, emotionally, and/or romantically attracted (American Psychological Association, 2012; Worthington et al., 2002).

Heterosexual Identity Development

The term **heteronormativity** refers to the idea that heterosexuality is the norm or preferred sexual orientation, and that opposite-sex people of different sexes or genders are best suited for sexual and marital relationships. Most sexual identities are heterosexual -- or straight -- in orientation. Because it is the norm, people with this identity are not often as conscious of it, and it fades into their psychological (and sociological) background. In fact, only recently has psychology begun outlining the developmental process by which someone develops a specifically heterosexual identity (Hoffman, 2004; Ybarra et al., 2016).

Consistent with the biopsychosocial approach, for example, Worthington and colleagues (2002) proposed a model that sees heterosexual identity development as influenced by biology, culture, religion, gender norms, and social attitudes. As adolescents explore their sexuality, these factors help them form a clear sexual identity in which their thoughts, feelings, and behaviors align. The model highlights the value of recognizing and accepting our sexual needs and preferences.

Sexual Minority Identity Development

Roughly 7.1 percent of individuals in the United States identify as lesbian, gay, bisexual, or transgender (LGBTQ+) (Jones, 2022). In 2015, when the national Youth Risk Behavior Survey (YRBS) first incorporated questions about sexual identity and behavior, Kann et al. (2016) documented that 6.0 percent of U.S. high school students identified as bisexual, 2.0 percent identified as gay or lesbian, and 3.2 percent were unsure of their sexual identity.

The development of one's sexual identity has long been considered a central task of adolescence (Erikson, 1968), but much more is known about the sexual identity development of members of sexual minority groups, those who eventually come to identify themselves as lesbian, gay, bisexual, or another sexual identity (LGBTQ+). Research on LGBTQ+ individuals began from the perspective that their sexuality was a mental illness (Hall et al., 2021), but over the last few decades, psychology has seen it instead as part of a continuum of normative human experience.

Early research on adolescents who identify as gay and lesbian sought to outline a sequence of typical stages on the way to forming and accepting a sexual identity (Cass 1996; Aglipay, 2014). In this view, revealing a gender identity or sexual status different from our birth assignment is a complex process that requires time and reflection and may unfold gradually over developmental stages. Subsequent research suggests milestones instead of a process (Savin-Williams & Cohen, 2015). These markers include first becoming aware of same-sex attractions, engaging in same-sex sexual activity, self-identifying as LGBTQ+, coming out to others, questioning the orientation, feeling different from others, and having a same-sex romantic relationship (Hall et al., 2021).

Gay, lesbian, bisexual, queer, or asexual identity intersects with other parts of a person's identity, like race, socioeconomic status, ability, and religion. Different ethnic groups may have unique views on LGBTQ+ identity due to cultural norms around family, religion, and sexuality (Greene, 1994). For example, people of color may avoid openly disclosing their LGBTQ+ identity to prevent further marginalization and may face rejection from

both their ethnic and LGBTQ+ communities, leading to multiple forms of oppression and a sense of abandoning their ethnic identity (Akerlund & Cheung, 2000).

A recent study examined how the timing and pacing of sexual identity development milestones differ across subgroups of Black, White, and Latino sexual minority individuals in the United States (Bishop et al., 2020).[18] Using data from participants aged eighteen to sixty years, it found that more recent cohorts reported earlier and faster milestone achievement than older cohorts. Gay men and those using newer identity labels (e.g., pansexual) reached milestones earlier, and Black and Latino participants reached some earlier than White participants (Bishop et al., 2020). A large-scale review of all existing literature revealed the average age at which various sexual-minority individuals reached the milestones (Table 10.3). Note the average age of first sexual attraction is around twelve to thirteen years of age, while the average age of first sexual contact is eighteen years of age (Hall et al., 2019). This indicates that LGBTQ+ youth are experiencing first sexual contact about a year later than heterosexual youth (National Center for Health Statistics, 2017).

Milestone	Average Age Reached for LGBTQ+ Persons	Social Group Differences
First sexual attraction	12.7 years	• Males reach earlier • Hispanics and Blacks reach earlier
First sexual contact	18.1 years	• Males reach earlier • Hispanics and Blacks reach earlier • Blacks reach earliest
Self-identified as LGBTQ+	17.8 years	• Males reach earlier • Hispanics and Blacks reach earlier
Started coming out	19.6 years	• Hispanics and Blacks reach earlier
First romantic relationship	20.9 years	• Hispanics and Blacks reach earlier

TABLE 10.3 Average Ages at Which Sexual-Minority Individuals Reach Sexual Milestones (source: Hall et al., 2021)[19]

Gender differences are mixed. For instance, men may take longer to come out and pursue LGBTQ+ relationships due to higher levels of internalized stigma (Barnes & Meyer, 2012). They often realize their same-sex attraction earlier than women and reach some milestones earlier, but they take longer to disclose their sexual identity after recognizing it (Martos et al., 2015; Katz-Wise et al., 2017). Bisexual people were found to reach the milestones later than gay or lesbian people. Bisexual and lesbian women typically reach significant life milestones at older ages than bisexual and gay men (Katz-Wise et al., 2017).

A recent study of teenagers (born after 1997) showed that White LGBTQ+ teens are more likely to be open about their sexuality than Black and Asian teens. Gay teens are more open than bisexual or questioning teens, and those who experienced more victimization are also more open. Factors that made teens less likely to be open and more hesitant to come out include being religious, attending religious services, and feeling higher internalized stigma. Overall, outness among teens varies by sociocultural factors (Moskowitz et al., 2022). Younger cohorts may reach these milestones earlier, likely due to changing sociocultural attitudes and increased acceptance of sexual minorities.

18 This study (Bishop et al., 2020) uses the terms “Black,” “White,” and “Latinx.”

Heterosexual youth generally experience their first romantic relationship between 16.6 and eighteen years of age (Hall et al., 2021), as much as four years earlier than do LGBTQ+ individuals. Thus, although the cultural landscape is quickly changing, social pressures and differential opportunities remain, resulting in a partially delayed timeline for today's LGBTQ+ youth. A positive environment for LGBTQ+ teens reduces stigma, leading to sexual identity development that aligns more closely with that of heterosexual youth and with the overall process of identity development. To support LGBTQ+ individuals in coming out, we can create safe spaces, provide access to supportive counseling, foster inclusive education, and encourage open and accepting dialogue within families and communities.

LIFE HACKS

How to Support a Teen Who Is Coming Out

About 60 percent more teens now identify as gay, bisexual, queer/questioning, or pansexual than in 2005. Most report at least a dawning awareness of their sexual orientation as early as childhood; many came out to their parents in adolescence or young adulthood. The rate and timing of these disclosures are crucial, because openness about our identity has both positive and negative health outcomes. Recall that identity is multifaceted, and exploring and committing to an identity across various aspects of our selves is beneficial to socioemotional well-being.

Coming out is the process of disclosing our sexual orientation to others, and it may be lifelong. One of the leading models envisions six stages in the process (Cass, 1979). It begins with identity confusion and a quest for information about sexual-minority identities. The individual may then progress to initial tolerance and eventually full acceptance of their sexual identity. Finally, they often experience a blossoming, in which they develop a sense of pride and integrate their sexual identity into their self-concept. This process takes time, and the patience and support of others are critical throughout. While the process was documented by Cass based on research and widespread experience, it is not a blueprint and does not reflect the development and emotions of all people. Individuals explore and determine their identity at their own pace and in their own way, and supporters should not emplace expectations or assumptions on others.

How can caregivers, teachers, peers, and mentors support young teens when they come out? PFLAG, the leading advocacy organization for LGBTQ+ individuals in the United States offers this advice:

- Show your love. Remind the person they are loved, no matter how complex your feelings may be. A simple hug conveys a sense of belonging, acceptance, and love.
- Be open to listening. Someone newly coming out likely doesn't have all the words and answers, and you might not either. This is only the beginning of a journey. Practice active listening skills. Feel free to ask open-ended questions when the timing seems right to let the person know you are there to listen—a key step for mutual understanding.
- Show support. If overt actions don't feel right yet, subtle acts can still send powerful messages of support and acceptance. Talk positively about a movie or TV character who is LGBTQ+. Mention news items relevant to sexual minorities to convey your awareness and support of the issues.
- Learn the vocabulary. Many terms associated with the LGBTQ+ community overlap or have nuanced meanings. You may make mistakes, but willingness to learn about and use the terminology is a concrete way to show support.
- Take care of yourself. Go for a walk, practice mindfulness, and give yourself time to sort through your own thoughts and emotions as you consider this complex aspect of the person's identity.
- Start early by being aware of your language, including to very young children. One way to signal you are an ally is to avoid heteronormative language like "Oh, the boys will be banging down your door one day!" when complimenting a female youth, or "I bet the girls love you!" when complimenting a male youth.

LINK TO LEARNING

If you or someone you know is an LGBTQ+ young person who needs information or support, reach out to The Trevor Project (https://openstax.org/r/104TrevorProj) for help. Text 678-678, call 1-866-488-7386, or chat through their website to reach a counselor for immediate support. You can also connect with other LGBTQ+ young people through The Trevor Project.

References

Aglipay, F. A. (2014). The Cass' theory of sexual identity formation: A study of the complexities of queer identity development. *Journal of Psychology Research, 4*(6), 411–418. https://www.semanticscholar.org/paper/The-Cass%E2%80%99-Theory-of-Sexual-Identity-Formation%3A-A-of-Fraylanie-Aglipay/0d60e2168563ebf82dd9d427a47e2b16ba98f92f

Akerlund, M., & Cheung, M. (2000). Teaching beyond the deficit model: Gay and lesbian issues among African Americans, Latinos, and Asian Americans. *Journal of Social Work Education, 36*(2), 279–292. https://www.academia.edu/27749974/Teaching_Beyond_the_Deficit_Model Barnes, D. M., & Meyer, I. H. (2012). Religious affiliation, internalized homophobia, and mental health in lesbians, gay men, and bisexuals. *American Journal of Orthopsychiatry, 82*(4), 505–515. https://psycnet.apa.org/doi/10.1111/j.1939-0025.2012.01185.x

Bishop, M. D., Fish, J. N., Hammack, P. L., & Russell, S. T. (2020). Sexual identity development milestones in three generations of sexual minority people: A national probability sample. *Developmental Psychology, 56*(11), 2177–2193. https://doi.org/10.1037/dev0001105

Buckingham, S. L., & Hutchinson, J. R. (2022). "It's like having strong roots. We're firmly planted": Cultural identity development among Alaska Native University students. Transcultural Psychiatry, https://doi.org/10.1177/13634615221122524

Buckingham, S. L., Schroeder, T. U., & Hutchinson, J. R. (2023). Elder-led cultural identity program as counterspace at a public university: Narratives on sense of community, empowering settings, and empowerment. American Journal of Community Psychology, 72(1–2), 32–47. https://doi.org/10.1002/ajcp.12673

Burrell-Craft, K. (2020). Are (we) going deep enough? A narrative literature review addressing critical race theory, racial space theory, and Black identity development. *Taboo: The Journal of Culture and Education, 19*(4), 9–26. https://www.researchgate.net/publication/351954235_Are_We_Going_Deep_Enough_A_Narrative_Literature_Review_Addressing_Critical_Race_Theory_Racial_Space_Theory_and_Black_Identity_Development

Cass, V. (1996). Sexual orientation identity formation: A Western phenomenon. In R. P. Cabaj & T. S. Stein (Eds.), *Textbook of homosexuality and mental health* (pp. 227–251). American Psychiatric Association.

Cheung, D. H., Boonmongkon, P., Ojanen, T. T., Damri, T., Samoh, N., Cholratana, M., Ratchadapunnathikul, C., Gilman, S. E., Sass, J., & Guadamuz, T. E. (2020). Peer victimisation and depression among gender conforming and non-conforming Thai adolescents. *Culture, Health & Sexuality, 22*(7), 808–821. https://doi.org/10.1080/13691058.2020.1737235

Choi, N. G. (2021). Psychosocial aspects of the Asian American experience: Diversity within diversity. *Journal of Comparative Family Studies, 35*(1), 129–131. https://www.jstor.org/stable/41603924

Cross, W. E., Jr., Parham, T. A., & Helms, J. E. (1991). The stages of Black identity development: Nigrescence models. In R. L. Jones (Ed.), *Black psychology* (3rd ed., pp. 319–338). Cobb & Henry Publishers. https://psycnet.apa.org/record/1991-98901-019

Cross, W. E., Neville, H. A., Austin, C. L., & Reinhardt, J. S. (2022). Black lives matter and nigrescence theory: When police violence triggers an encounter. *Journal of Black Psychology, 48*(3–4), 309–326. https://doi.org/10.1177/00957984221086449

Crouter, A. C., Whiteman, S. D., McHale, S.M., & Osgood, D. W. (2007). Development of gender attitude traditionality across middle childhood and adolescence. *Child Development, 78*(3), 911–926. https://doi.org/10.1111/j.1467-8624.2007.01040.x

Del Toro, J., Atkin, A., Golden, A. R., Ip, K. I., & Wang, M. T. (2024). Ethnic/racial discrimination, school cultural socialization, and negative affect: Daily diaries reveal African American, Asian American, and Latinx adolescents' resilience. *Journal of Educational Psychology*. https://doi.org/10.1037/edu0000893

Diamond, L. M., & Butterworth, M. (2008). Questioning gender and sexual identity: Dynamic links over time. *Sex Roles, 59*, 365–376. https://doi.org/10.1007/s11199-008-9425-3

Erikson, E. H. (1968). *Identity: Youth and crisis.* Norton & Co. https://psycnet.apa.org/record/1968-35041-000

Ferdman, B. M., & Gallegos, P. I. (2001). Racial identity development and Latinos in the United States. In C. L. Wijeyesinghe & B. W. Jackson III (Eds.), *New perspectives on racial identity development: A theoretical and practical anthology* (pp. 32–66). New York University Press. https://scholar.google.com/citations?view_op=view_citation&hl=en&user=8cNOP7UAAAAJ&citation_for_view=8cNOP7UAAAAJ:hFOr9nPyWt4C

Flores, C. (2023). *La raza cósmica? The construction of latinx racial identities beyond panethnicity.* Stanford University. https://www.wpsanet.org/papers/docs/Flores%20La%20Raza%20Cosmica%20Paper.pdf

Galliher, R. V., Jones, M. D., & Dahl, A. (2011). Concurrent and longitudinal effects of ethnic identity and experiences of discrimination on psychosocial adjustment of Navajo adolescents. *Developmental Psychology, 47*(2), 509–526. https://doi.org/10.1037/a0021061

Gardner-Kitt, D. L., & Worrell, F. C. (2007). Measuring nigrescence attitudes in school-aged adolescents. *Journal of Adolescence*, *30*(2), 187–202.

Gonzales-Barrera, A. (2019). *Hispanics with darker skin are more likely to experience discrimination than those with lighter skin.* Pew Research Center. https://www.pewresearch.org/fact-tank/2019/07/02/hispanics-with-darker-skin-are -more-likely-to-experience-discrimination-than-those-with-lighter-skin/

Greene, B. (1994). Ethnic-minority lesbians and gay men: Mental health and treatment issues. *Journal of Consulting and Clinical Psychology, 62*(2), 243–251. https://psycnet.apa.org/doi/10.1037/0022-006X.62.2.243

Hall, W., Dawes, H., & Plocek, N. (2021). Sexual orientation identity development milestones among lesbian, gay, bisexual, and queer people: A systematic review and meta-analysis. *Frontiers in Psychology, 12*. https://doi.org/10.3389/fpsyg.2021.753954

Hill, J. P., Lynch, M. E. (1983). The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn & A. Petersen (Eds.), *Girls at puberty: Biological and psychosocial perspectives* (pp. 201–228). Springer. https://doi.org/10.1007/978-1-4899-0354-9_10

Hoffman, R. M. (2004). Conceptualizing heterosexual identity development: Issues and challenges. *Journal of Counseling and Development, 82*(3), 375–380. https://doi.org/10.1002/j.1556-6678.2004.tb00323.x

House, L. E., Stiffman, A. R., & Brown, E. (2006). Unraveling cultural threads: A qualitative study of culture and ethnic identity among urban southwestern American Indian youth parents and elders. *Journal of Child and Family Studies, 15*(4), 393–407. http://dx.doi.org/10.1007/s10826-006-9038-9

Hutton, S. (2022, June 9). The burden of code-switching. LSA Psychology, University of Michigan. https://lsa.umich.edu/lsa/news-events/lsa-magazine/Summer-2022/the-burden-of-code--switching.html

Jiménez, T. R., Fields, C. D., & Schachter, A. (2015). How ethnoraciality matters: Looking inside ethnoracial "groups." *Social Currents, 2*(2), 107–115. https://doi.org/10.1177/2329496515579765

Johnson, D. G., Mattan, B. D., Flores, N., Lauharatanahirun, N., & Falk, E. B. (2021). Social-cognitive and affective antecedents of code switching and the consequences of linguistic racism for Black people and people of color. *Affective Science, 3*(1), 5–13. https://doi.org/10.1007/s42761-021-00072-8

Jones, J. M. (2022, February 17). *LGBT identification in U.S. ticks up to 7.1%.* Gallup. https://news.gallup.com/poll/389792/lgbt-identification-ticks-up.aspx

Kann, L., Olsen, E. O., McManus, T., Harris, W. A., Shanklin, S.L., Flint, K.H., Queen, B., Lowry, R., Chyen, D., Whittle, L., Thornton, J., Lim, C., Yamakawa, Y., Brener, N., & Zaza, S. (2016). Sexual identity, sex of sexual contacts, and health-related behaviors among students in grades 9–12—United States and Selected Sites, 2015. *MMWR Surveillance Summaries, 65*(9), 1–202. https://doi.org/10.15585/mmwr.ss6509a1

Katz-Wise, S. L., Budge, S. L., Fugate, E., Flanagan, K., Touloumtzis, C., Rood, B., ... & Leibowitz, S. (2017). Transactional pathways of transgender identity development in transgender and gender-nonconforming youth and caregiver perspectives from the Trans Youth Family Study. *International Journal of Transgenderism*, *18*(3), 243-263.

Katz-Wise, S. L., Rosario, M., Calzo, J. P., Scherer, E. A., Sarda, V., & Austin, S. B. (2017). Associations of timing of sexual orientation developmental milestones and other sexual minority stressors with internalizing mental health symptoms among sexual minority young adults. *Archives of Sexual Behavior, 46*(5), 1441–1452. https://doi.org/10.1007/s10508-017-0964-y

Klaczynski, P. A., Felmban, W. S., & Kole, J. (2020). Gender intensification and gender generalization biases in pre-adolescents, adolescents, and emerging adults. *British Journal of Developmental Psychology, 38*(3), 415–433. https://psycnet.apa.org/doi/10.1111/bjdp.12326

Kollmayer, M., Schultes, M.-T., Schober, B., Hodosi, T., & Spiel, C. (2018). Parents' judgments about the desirability of toys for their children: Associations with gender

19 This study (Hall et al., 2021) uses the terms "Hispanic/Latinx," "Hispanic/Latino," "Hispanic/Latina," "Black," "White," and "Asian."

role attitudes, gender-typing of toys, and demographics. *Sex Roles, 79*(5), 329–341. https://doi.org/10.1007/s11199-017-0882-4
Koutrelakos, J. (2013). Ethnic identity: Similarities and differences in White groups based on cultural practices. *Psychological Reports, 112*(3), 745–762. https://doi.org/10.2466/17.10.PR0.112.3.745-762
Krogstad, J. M., Passel, J. S., Moslimani, M., & Noe-Bustamante, L. (2023). Key facts about U.S. Latinos for national Hispanic heritage month. Pew Research Center. https://www.pewresearch.org/short-reads/2022/09/23/key-facts-about-u-s-latinos-for-national-hispanic-heritage-month/
Kulis, S., Wagaman, M. A., Tso, C., & Brown, E. F. (2013). Exploring indigenous identities of urban American Indian youth of the Southwest. *Journal of Adolescent Research, 28*(3), 271–298. https://doi.org/10.1177/0743558413477195
Lagaert, S., Van Houtte, M., & Roose, H. (2017). Engendering culture: The relationship of gender identity and pressure for gender conformity with adolescents' interests in the arts and literature. *Sex Roles, 77*(7–8), 482–495. https://link.springer.com/article/10.1007/s11199-017-0738-y
Leavitt, P. A., Covarrubias, R., Perez, Y. A., & Fryberg, S. A. (2015). "Frozen in time": The impact of Native American media representations on identity and self-understanding. *Journal of Social Issues, 71*(1), 39–53. https://psycnet.apa.org/doi/10.1111/josi.12095
Lucero, N. M. (2010). Making meaning of urban American Indian identity: A multistage integrative process. *Social Work, 55*(4), 327–336. https://doi.org/10.1093/sw/55.4.327
Martos, A. J., Nezhad, S., & Meyer, I. H. (2015). Variations in sexual identity milestones among lesbians, gay men and bisexuals. *Sexuality Research and Social Policy, 12*(1), 24–33. https://doi.org/10.1007/s13178-014-0167-4
Moskowitz, D. A., Rendina, H. J., Alvarado Avila, A., & Mustanski, B. (2022). Demographic and social factors impacting coming out as a sexual minority among Generation-Z teenage boys. *Psychology of Sexual Orientation and Gender Diversity, 9*(2), 179–189. https://doi.org/10.1037/sgd0000484
National Center for Health Statistics. (2017, August 14). *Key statistics from the National Survey of Family Growth.* Centers for Disease Control and Prevention, U.S. Department of Health & Human Services. https://www.cdc.gov/nchs/nsfg/key_statistics/s.htm#sexualactivity
Oh, J. W., Park, S., Lim, S., & Lee, E. S. (2024). Age of first experience of gender incongruence among transgender and non-binary individuals. *Obstetrics & Gynecology Science*, *67*(1), 132.
Pabón Gautier, M. C. (2016). Ethnic identity and Latino youth: The current state of the research. *Adolescent Research Review, 1*(4), 329–340. https://doi.org/10.1007/s40894-016-0034-z
Patten, E. (2016, April 20). *The nation's Latino population is defined by its youth: Nearly half of U.S.-born Latinos are younger than 18.* Pew Research Center. https://www.pewresearch.org/social-trends/2016/04/20/the-nations-latino-population-is-defined-by-its-youth/
Poston, W. C. (1990). The biracial identity development model: A needed addition. *Journal of Counseling &* Development, 69(2), 152–155. https://psycnet.apa.org/doi/10.1002/j.1556-6676.1990.tb01477.x
Priess, H. A., Lindberg, S. M., & Hyde, J. S. (2009). Adolescent gender-role identity and mental health: Gender intensification revisited. *Child Development, 8*0(5), 1531–1544. https://doi.org/10.1111/j.1467-8624.2009.01349.x
Rivas-Drake, D., Seaton, E.K., Markstrom, C., Quintana, S., Syed, M., Lee, R. M., Schwartz, S. J., Umaña-Taylor, A. J., French, S., & Yip T. (2014). Ethnic and racial identity in adolescence: Implications for psychosocial, academic, and health outcomes. *Child Development, 85*(1), 40–57. https://doi.org/10.1111/cdev.12200
Sandoval, M. (2023). Capturing the Racial Identities of Latiné Students at a Mid-size Texas University. Honors Thesis. https://digitalcommons.tamuc.edu/honorstheses/207
Schachter, A. (2014). Finding common ground? Indian immigrants and Asian American panethnicity. *Social Forces, 92*(4), 1487–1512. http://dx.doi.org/10.1093/sf/sou019
Savin-Williams, R.C., & Cohen, K. M. (2015). Developmental trajectories and milestones of lesbian, gay, and bisexual young people. *International Review of Psychiatry, 27*(5), 357–366. https://doi.org/10.3109/09540261.2015.1093465
Sellers, R. M., Copeland-Linder, N., Martin, P. P., & L'Heureux Lewis, R. (2006). Racial identity matters: The relationship between racial discrimination and psychological functioning in African American adolescents. *Journal of Research on Adolescence*, *16*(2), 187–216. https://doi.org/10.1111/j.1532-7795.2006.00128.x
Shanahan L., McHale, S. M., Crouter, A.C., & Osgood, D.W. (2007). Warmth with mothers and fathers from middle childhood to late adolescence: Within- and between-families comparisons. *Developmental Psychology, 43*(3), 551–563. https://doi.org/10.1037/0012-1649.43.3.551
Statistics Canada. (2024, March 20). *Special interest profile* [table: 98-26-0009]. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/sip/index.cfm?Lang=E
Steensma, T. D., McGuire, J. K., Kreukels, B. P., Beekman, A. J., Cohen-Kettenis, P. T. (2013). Factors associated with desistence and persistence of childhood gender dysphoria: a quantitative follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry, 52*(6), 582–590.
Torres, V. (2003). Influences on ethnic identity development of Latino college students in the first two years of college. *Journal of College Student Development, 44*(4), 532–547. https://psycnet.apa.org/doi/10.1353/csd.2003.0044
Turban, J. L., de Vries, A. L. C., Zucker, K. J., & Shadianloo, S. (2018). *Transgender and gender non-conforming youth.* IACAPAP e-Textbook of Child and Adolescent Mental Health. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions. https://iacapap.org/_Resources/Persistent/e98a7ad9ab1d202adc53363a3f92871ad29fc104/H.3-GENDER-IDENTITY-Edition-2018-REVISED.pdf
Umaña-Taylor, A. J., & Rivas-Drake, D. (2021). Ethnic-racial identity and adolescents' positive development in the context of ethnic-racial marginalization: Unpacking risk and resilience. *Human Development, 65*(5–6), 293–310. http://dx.doi.org/10.1159/000519631
Umaña-Taylor, A. J., Douglass, S., Updegraff, K. A., & Marsiglia, F. F. (2018). A small-scale randomized efficacy trial of the Identity Project: Promoting adolescents' ethnic–racial identity exploration and resolution. *Child Development, 89*(3), 862–870. https://doi.org/10.1111/cdev.12755 https://doi.org/10.1111/cdev.12755
U.S. Census Bureau. (2020). Hispanic Americans by the numbers. http://www.infoplease.com/spot/hhmcensus1.html
U.S. Census Bureau. (2023). Census Bureau Releases New American Community Survey Selected Population Tables and American Indian and Alaska Native Tables. https://www.census.gov/newsroom/press-releases/2023/acs-selected-population-aian-tables.html
Walters, K. L. (1999). Urban American Indian identity attitudes and acculturation styles. *Journal of Human Behavior in the Social Environment, 2*(1–2):163–178. https://psycnet.apa.org/doi/10.1300/J137v02n01_11
Woo, B., Maglalang, D. D., Ko, S., Park, M., Choi, Y., & Takeuchi, D. T. (2020). Racial discrimination, ethnic-racial socialization, and cultural identities among Asian American youths. *Cultural Diversity and Ethnic Minority Psychology, 26*(4), 447–459. https://psycnet.apa.org/manuscript/2020-13975-001.pdf
Worthington, R. L., Savoy, H. B., Dillon, F. R., & Vernaglia, E. R. (2002). Heterosexual identity development: A multidimensional model of individual and social identity. *The Counseling Psychologist, 30*(4), 496–531. https://psycnet.apa.org/doi/10.1177/00100002030004002
Ybarra, M. L., Rosario, M., Saewyc, E., & Goodenow, C. (2016). Sexual behaviors and partner characteristics by sexual identity among adolescent girls. *Journal of Adolescent Health, 58*(3), 310–316. https://doi.org/10.1016/j.jadohealth.2015.11.001
Zaliznyak, M., Yuan, N., Bresee, C., Freedman, A., & Garcia, M. M. (2021). How early in life do transgender adults begin to experience gender dysphoria? Why this matters for patients, providers, and for our healthcare system. *Sexual Medicine, 9*(6), 100448-100448.

10.4 Social Contexts in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the role of peers in social development
- Describe the role of romantic relationships and dating in adolescence
- Discuss the influence of various media on adolescent development
- Describe the context of education and trends in academic achievement across adolescence

Seventeen-year-old Jasmine has been looking forward to the big school dance two weeks from now. She is particularly excited because this is the first time she is going with a date rather than with friends. She met her date while hanging out with mutual friends over the summer. Aside from a shared interest in art and sci-fi movies, they connected over their shared experience of being neurodiverse. Their friendship has grown into a more intimate relationship, and they recently kissed for the first time. This dance will be the first time their classmates will see them as a couple, and Jasmine's excitement is mixed with a bit of pride and concern: "What

will everyone think of the two of us together? Will they wonder if we're a good match? What will we do after the dance?" She wonders whether she's ready to commit to this person, to share her hopes and plans and fears with them. And she worries about whether there are unspoken expectations for getting more physically intimate; she doesn't feel ready for more yet. Nevertheless, she is eager to see what new experiences lie ahead (Figure 10.9).

FIGURE 10.9 Romantic relationships are an important component of identity development during adolescence. (credit: modification of work "Parallel Play Portrait" by Gritchelle Fallesgon/Disabled And Here, Public Domain)

Many parts of development are informed by our own and others' expectations based on the various social contexts in our lives. These include peers, friends, intimate relationships, plus the contexts of media and education. A key part of healthy adolescence is exploring and developing one's identity across these contexts.

Peer Influences on Development

Brain development in adolescence supports a heightened interest in peers and other social cues, and an increased sensitivity to the rewards they can offer. The sophisticated new skills that come with these cognitive developments allow teens to apply increasingly advanced reasoning about social experiences, including hypothetical ones like, "Everyone is watching" (Elkind's concept of the imaginary audience). Recall also that one of the many developmental tasks facing adolescents is a gradual turning outward from the family and toward society at large (Havighurst, 1973; Manning, 2002). Peers and peer relations become a transitional force allowing adolescents to do just that (Brown & Larson, 2009; Rubin et al., 2006).

Against the backdrop of these developments, society also purposefully restructures the environment of adolescents, who spend one-third or more of each weekday in school where they interact with their peers almost every day. Adolescence, then, is a time of heightened sociability, often beyond the direct supervision of parents or other adults. Through friendships as well as membership in peer groupings of different sizes, adolescents build and maintain a reputation, gain status within the larger group, and climb the social ladder.

Friendships

A **friendship** is an intimate, emotionally close relationship between two individuals (Brown & Larson, 2009). Friendships form based on similar interests such as music or sports and may dissipate if those interests change over time. However, as adolescence progresses, and as individuals actively explore and form their identity, friendships tend to become more stable and enduring. Intimacy is a key feature of friendship, and in a psychological sense it means making ourself vulnerable to another.

Especially in early and midadolescence, friendships can be exclusive and intense, relying on trust and mutual

support. Later in adolescence, this intensity is often transferred to a romantic relationship (Costello et al., 2023; Wesche et al., 2023). Research in multiple countries has consistently found that males tend to share personal information with a single best friend, whereas females tend to disclose evenly among their close friends (Ko et al., 2015; Kitts & Leal, 2021). However, it does vary. For example, male students at a Japanese university reported sharing more personal information with close friends than female students did (Fankhauser, 2018). This was true overall and for specific topics. The study used two different measures of self-disclosure, both showing similar results, especially in cross-gender friendships. It also found that feeling close to a friend and trusting the friendship's stability were linked to more self-disclosure (Fankhauser, 2018). These findings highlight the role friendships serve: adolescents switch some of their needs for social and emotional support from their parents to close friends, and in turn these needs for intimacy are also brought into romantic relationships later on.

Cliques

A close group of three to a dozen or so friends is called a **clique** (Brown & Larson, 2009). Cliques serve many functions for developing adolescents. First, they break the larger social environment into one of more manageable size and offer a context in which much socialization ("hanging out") occurs, both within and outside the school setting. They also provide a source of emotional support for members, as well as a sense of belonging and encouragement (McFarland et al., 2014). For example, a group of close-knit friends in a clique who share similar interests, such as skateboarding or a science club, can be there to listen and offer advice during challenging times. When a teen is stressed about an upcoming exam, their clique might organize a study session to help all members prepare, boosting both academic performance and emotional well-being. And they can offer encouragement and celebrate each other's successes, such as cheering on a member at a competition or congratulating them on a good achievement in the classroom.

An analysis of adolescents from about 170 secondary school classrooms asked students to identify the cliques in their school and nominate peers as members of each (Pattisellano et al., 2015). First, the study found the average size of a clique was just shy of six members (5.72, to be exact). Second, researchers discovered that some cliques have a status hierarchy, while others are more equality driven, or egalitarian (Pattisellano et al., 2015). Peer status matters in the larger social context of the adolescent world because both aggression and prosocial (helping) behavior are related to social standing. Thus, being a member of a higher-status clique could offer protection against aggression from others, while being a member of a low-status clique could be disadvantageous.

The term **relational aggression** refers to the practice of including or excluding others or otherwise threatening a sense of belonging such as by spreading gossip. It was associated more with egalitarian cliques. This makes sense, though; one purpose of a social hierarchy is to spell out exactly where everyone stands in relation to one another. In an egalitarian group this is not as easy to discern, and when members are striving for status, an increase in aggression can result. More prosocial behavior toward other members was found within hierarchical groups, as was increased aggression toward other cliques (Kwon & Lease, 2007, Zhao & Li, 2022). This result shows both the function and the power of cliques—to support those within the group, and to advocate for social standing against other groups.

Crowds

A larger social grouping in the social milieu of adolescents is called a **crowd**, and it can have many dozens of members, not all of whom are necessarily friends or even know each other. Crowds can be made up of different cliques and often form around various activities, interests, aspects of youth culture (such as anime), or members' personality characteristics, social status, or reputation (Brown & Larson, 2009) (Figure 10.10). Common crowd names in U.S. high schools include "populars," "jocks," "brains," and "normals" (Crabbe, et al., 2019). The names of crowds may change, but the presence of these common themes in crowds has been around for quite some time.

(a) (b) (c)

FIGURE 10.10 (a) Friends, (b) cliques, and (c) crowds are important groups in teen development. (credit a: modification of work "Friends working on a computer" by "antoinedigital"/nappy, Public Domain; credit b: modification of work "Group of friends hanging out" by "Stacey_jayyy"/nappy, Public Domain; credit c: modification of work "Day 3 - The One Young World Summit 2014" by One Young World/Flickr, Public Domain)

How do individuals become part of a crowd during adolescence? Crowds come together through both selection (people with similar values, interests, and experiences find each other) and socialization (members reinforce shared attitudes and behaviors to uphold their identity and sense of belonging). Research suggests that academic orientation, athleticism, and physical appearance are among the primary characteristics through which teens sort themselves from an early age onward (Brown & Larson, 2009), and that ethnic and racial group membership are not (Brown, et al., 2008). One way to think of crowds and cliques is that crowds exist as part of the large social backdrop of adolescence, while actual peer relationships occur within and between cliques and friendships.

For most adolescents, the way their peers view them is very important, and not being accepted can lead to problems like relational aggression and poor academic performance (Lorijn et al., 2022). Girls are especially likely to worry about conflicts and being rejected by their peers (Chesney-Lind & Irwin, 2008). Girls who feel rejected often seek attention and form cliques to feel accepted (Hamilton, 2010). Popular students may act aggressively because they believe their high status protects them from negative consequences. Within these cliques, teens join the same activities and spend free time together, creating a strong social network. In contrast, less popular students interact less with their classmates and have fewer close friends. Overall, teen friendships help organize social interactions in the classroom, affecting teen mental health and behavior (Long et al., 2021; Casper et al., 2020).

Peer Social Risks

Teens who struggle to find a social group often face significant isolation and loneliness, which are linked to various negative outcomes including increased risk of depression, anxiety, and low self-esteem (Laursen & Hartl, 2013). Social isolation can also hinder academic performance and school engagement, since the peer support that can encourage and motivate the individual is lacking (Wentzel, 2005). Feelings of exclusion can also arise, and the absence of support increases the likelihood of engaging in harmful behaviors as a coping mechanism (Hawkley & Capitanio, 2015). For example, teenagers who feel isolated and lack positive social connections often seek acceptance in alternative groups, which can include gangs (Dmitrieva et al., 2014). Gangs offer a sense of community and identity, though through engagement in deviant behaviors. Addressing social isolation in teens and providing positive social support systems through parents, teachers, mentors, and community programs are critical to prevent gang involvement as well as promote overall well-being and teen mental health.

Romantic Relationships and Dating

All the social, physical, emotional, and cognitive developments that occur during adolescence create new ways for us to relate to one another within a romantic relationship. A **romantic relationship** is a bond psychologically distinct from mere liking and includes components of affection, intimacy, exclusivity, and

interdependence (Aron et al., 2006).

Most adolescents enter into at least one romantic relationship during their teenage years (Lenhardt, et al., 2015), as part of the larger trend of shifting their focus from their family of origin toward peers and the larger society (Collins, 2003; Brown, 2004; Sorensen, 2007). Romantic relationships offer the developing adolescent space to explore what it means to be vulnerable (intimate) and connected to another individual, and to find a new source of support and comfort from a peer (Jorgensen-Wells, et al., 2021). They also provide valuable experience in relating to others in a way that will become a major focus in early adulthood.

Attachment

Recall that our internal working models of relationships provide us with scripts, including what we can expect from a relationship and how others are likely to behave. With these models, adolescents bring their full relationship and attachment history into their first (and subsequent) romantic relationships.

According to Hazan & Shaver (1987), both the ability to enter romantic relationships and the quality of those relationships are also connected to an individual's attachment history (4.4 Social Development in Infants and Toddlers). Individuals with a secure attachment history bring several assets to an adolescent romantic relationship. These include effective communication skills like listening and sharing, appropriate emotional expression, the ability to assert and negotiate needs and expectations, and the capacity to seek support from and provide it to a partner (Carroll et al., 2007; Halford, 2011) (Figure 10.11). Such individuals also show skill in approaching others, forming intimate connections, and benefiting from such connections. They exhibit greater warmth and understanding and use a more constructive approach to resolving disputes (Tan, et al., 2016), which is essential because conflicts within a romantic relationship often arouse strong emotions.

FIGURE 10.11 Teens with a secure attachment history are often skilled at listening, sharing, and offering emotional support to others. (credit: modification of work "Hugging couple" by freestocks.org/Flickr, Public Domain)

Adolescents who have developed insecure attachment styles, including anxious-preoccupied (termed "ambivalent" in childhood) and avoidant, bring different experiences, expectations, and skill sets to their first romantic relationships (Brar et al., 2023; Choi et al., 2022; Dinero et al., 2008; Stavropoulos et al., 2018). Those with an anxious-preoccupied attachment history are interested in forming romantic relationships and enter such relationships eagerly. However, because of the inconsistent support and confusing mix of disappointment and frustration in their previous relationships, they often lack the confidence that a romantic relationship will bring all the benefits they are hoping for. Instead, they may seek frequent reassurance from their partner

about their commitment and support. Romantic partners in turn often experience this need for reassurance as clinginess and may try to distance themselves emotionally. Ironically, this reaction is exactly what the internal working model of someone with anxious-preoccupied attachment predicts. Any resulting distancing, rejection, or breakup reinforces that model.

Adolescents with an avoidant attachment history don't expect much from a romantic relationship, are overly self-reliant, and approach close relationships with skepticism and worry. These expectations often color their experience of early romantic relationships: any instance of dissatisfaction leads them to withdraw, further reinforcing their internal working model (Stavropoulos, et al., 2018).

A central tenet of attachment theory, however, is that partnering with someone who has a secure attachment style can benefit individuals with an anxious-preoccupied or avoidant attachment history. For instance, research shows that teenagers who engage in positive peer relationships, receive mentoring, and experience supportive school environments can develop healthy attachments and show resilience despite early challenges with unhealthy attachment patterns (Grossmann et al., 2005). Thus, we see the potential for positive development and reworking of the insecurely attached individual's internal working model within the context of romantic relationships.

Dating Violence and Unhealthy Relationships

Teen interpersonal health risks often stem from their socioemotional needs for dating and establishing romantic relationships with appropriate peers. Romantic relationships are crucial for socioemotional development because they help to develop intimacy skills and shape identity and autonomy (Connolly & McIsaac, 2009). However, they can also generate intense emotions and conflicts, sometimes with the potential for teen dating violence (TDV). The Centers for Disease Control and Prevention (2024) defines dating violence as a variety of unsafe behaviors inflicted on a partner. Psychological dating violence includes manipulative actions aimed at indirectly harming the partner. Physical dating violence can range from pushing and slapping to more severe acts like beating, kicking, or strangling. Sexual TDV includes forced sexual activities, from unwanted touching to forced penetration. Stalking is a pattern of repeated, unwanted attention and contact by a current or former partner that causes fear or safety concerns for an individual or someone close to them (CDC, 2024).

Many adolescents report experiencing violence in their romantic relationships. Data from the 2011–2021 Youth Risk Behavior Surveys show significant rates of these experiences among U.S. high school students, with notable disparities affecting females, racial and ethnic minorities, and sexual minority youths (Basile, 2020). In 2021, 8.5 percent reported physical dating violence, 9.7 percent reported sexual dating violence, 11.0 percent reported sexual violence, 15 percent experienced bullying at school, and 15.9 percent faced electronic bullying (Clayton, 2023). A meta-analysis by Wincentak et al. (2017) found that 20 percent of teens aged thirteen to eighteen years have experienced physical dating violence, and 9 percent have experienced sexual dating violence. Given how common dating violence is, and the severity of its effects including psychological distress, suicidal thoughts, and post-traumatic symptoms (Exner-Cortens et al., 2013; Hébert et al., 2017), it is now seen as a serious public health problem. A recent study of late-stage adolescents' views on romantic relationships found that while teens can identify healthy and unhealthy relationship traits, some find it hard to see jealousy and possessiveness as negative behaviors, often mistaking them for signs of strong interest (Brar et al., 2023). Programs promoting healthy dating behaviors, clarifying unhealthy traits, teaching respectful conflict resolution, and encouraging intervention in abusive situations can benefit all teens (Foshee et al., 2014).

Teen dating violence, sexual violence, and bullying during adolescence are linked to health and behavioral issues in adulthood. Victimized teens may engage in risky behaviors like substance misuse or develop eating disorders as coping mechanisms (Batchelder et al., 2022). Studies also indicate that TDV is longitudinally associated with increasing high-risk behaviors, such as marijuana and alcohol use, and poor mental health outcomes (Piolanti et al., 2023). Trauma can also impair academic performance and social relationships,

leading to isolation (Cava et al., 2020) and further emotional distress. Addressing these risks requires comprehensive sex and relationship education, preventative socioemotional health services, and accessible intervention support to ensure teens can establish and maintain healthy, respectful relationships. For instance, the reality of TDV should be included in school curricula focused on sex and relationship education. Schools must commit to fostering a violence-free social environment and encourage bystander intervention (Banyard et al., 2020).

LINK TO LEARNING

To learn more about the signs of a healthy or unhealthy relationship, check out the youth.gov characteristics of healthy and unhealthy relationships (https://openstax.org/r/104HealthyRlshp) for more information.

Media as Context for Development

Peer relationships rightly take center stage as an important context for adolescent development. However, media, including social media, are also a central feature of adolescent life and are intricately linked to social relationships. Teens' media diet, usually characterized by excessive screen time, often includes social media and messaging apps, which can lead to problematic behaviors like sexting, the transmission of sexually suggestive or explicit images via texts, and sexual harassment. Studies show that increased phone use is associated with higher risks of exposure to inappropriate content and cyberbullying, with negative impacts on teens' mental health and psychological well-being.

Media Diet

What do we know about the media diet of teenagers today? The most relevant indicator is screen time, which includes time spent watching videos online, playing or watching others play video games, using tablets for creative purposes, using virtual reality devices, browsing the internet, using social media apps, and reading e-books. Average daily screentime for teenagers in 2021 was eight hours and thirty-nine minutes, an increase from six hours and forty minutes daily in 2015 (Rideout et al., 2022).

Research shows that 77 percent of teens watch online videos every day and spend an average of ninety minutes a day using social media apps such as Instagram and Snapchat. The Pew Research Center reports that 19 percent of teens use YouTube “almost constantly,” and 16 percent use TikTok with the same level of intensity (Vogels, 2022) (Figure 10.12). Teens from lower-income households report the highest screen use, averaging seven hours and thirty-two minutes per day.

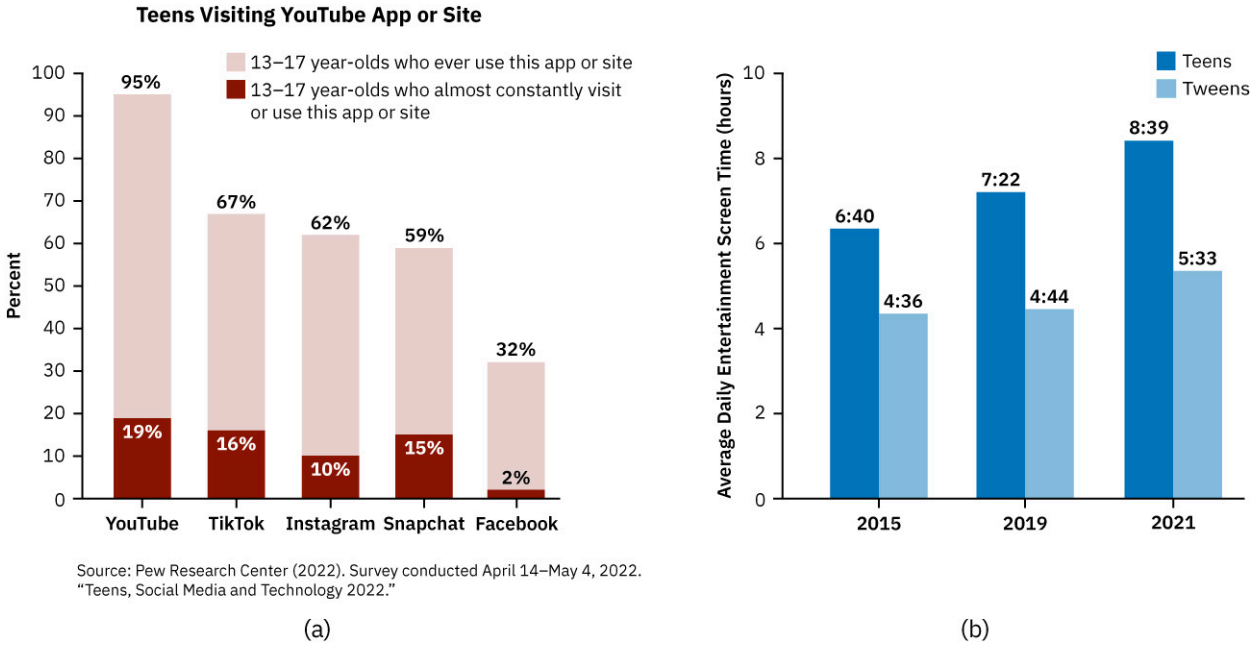


FIGURE 10.12 The total screen time usage per day for entertainment purposes has significantly increased for both preteens and teens. (data source a: Pew Research Center; data source b: Common Sense Media; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The COVID-19 pandemic of 2020–2023 markedly increased media use by teenagers. Contributing factors included societywide shutdowns of schools and other gathering places and social distancing protocols that made technology necessary for human interaction. Teenagers spent an average of more than eleven hours a day in front of screens during the pandemic, including for schooling; for more than 40 percent of them, this increase also meant more social media and video viewing (Hamilton et al., 2023; Marciano et al., 2022). Social media did let teens stay connected with one another during the pandemic, however, and its use then has been linked to lower stress, boredom, and loneliness among youth, in contrast to findings about social media use and adolescents' psychological health post-pandemic (Marciano, et al., 2022).

There is a significant rise in anxiety, depression, and mental health issues among teenagers, which is linked to increased screen time and social media use. For example, the amount of media information about the pandemic itself increased teens' feelings of anxiety. Researchers suggest that digital interactions contribute to a decline in face-to-face social skills and an increase in feelings of loneliness and inadequacy. They emphasize the need for reduced screen exposure to improve mental well-being in young people (Twenge, 2020; Haidt, 2024). When adolescents use their screen time as a replacement for social interactions, negative effects do emerge, such as a less positive body image, lower self-esteem, and an uptick in eating disorders (Ramsey, et al., 2023).

Psychological Effects

What do we know about the psychological effects of extensive media use? First, there are some positives. The primary purpose of all media is to communicate and entertain, facilitate interaction and engagement (especially over long distances), give exposure to new ideas and perspectives, and foster collaboration (American Academy of Pediatrics, 2016). Media sources also provide a way for isolated individuals to connect more easily with other people and resources, and an easier entry point to social interaction for those who may be shy or isolated. Some media are also extremely effective at advocating for certain positions or attitudes, so they can help spread positive and healthy information.

Psychologists, health professionals, and communications experts have also documented several physical health risks of media use. In a review of the literature, the American Academy of Pediatrics (2016) reports a

fivefold increase in the chance of developing obesity among teens who watch more than five hours of media per day. One reason is an increase in snacking or passive eating during television viewing. Heavy media use can also increase sleep disturbances in teens (and adults): the blue cast to the light of screens interferes with the body's melatonin levels, and adolescents have different sleep needs than children. These physical health risks can in turn increase psychological and socioemotional health risks.

In a systematic review of fifty studies from seventeen countries, researchers found that social media use is linked to body image concerns, eating disorders, and poor mental health among young individuals aged ten to twenty-four years. Social media exposure may lead to negative body image perceptions and contribute to the rising prevalence of eating disorders, emphasizing the potential global public health significance of this issue (Dane & Bhatia, 2023). Higher media use is predictive of a long list of other negative impacts including increased alcohol and tobacco use (Lewycka et al., 2018), earlier initiation of sexual behaviors (Smith et al., 2016), desensitization (or normalization) of certain negative content such as self-harming and disordered eating, increased risk of cyberbullying (as target or perpetrator), and sexting (Bozzola et al., 2023).

Sexting and Sexual Harassment

According to the CDC (2019), "sexual violence can occur in person, online, or via technology, as in the cases of posting or sharing sexual pictures of someone without their consent, or non-consensual sexting." Technology allows people to reach an audience virtually anywhere and at any time, and it is increasingly simple to involve someone by using images and/or videos. Teens report considerable pressure to sext (Abeele et al., 2014; Lunde & Joleby, 2023). Fifteen percent reported having sent a sext and 25 percent had received one (Giordano, et al., 2022). A recent study looked at how common abusive sexting is among Portuguese teens and the psychological traits of those involved, like emotional issues, signs of psychopathy, and past trauma (Barroso et al., 2021). Among twelve- to twenty-year-old participants, about 4.8 percent admitted to abusive sexting and 4.3 percent reported being victims. Abusive sexting was more frequent among males and those in midadolescence, and both perpetrators and victims had higher rates of emotional and behavioral problems, childhood abuse, and aggression (Barroso et al., 2021).

Abusive messages can easily be forwarded to large groups of recipients without the subject's permission. The **age of consent**, which varies state to state and country to country, is the minimum age at which an individual can legally make decisions to engage in sexual behavior. In some U.S. states, it is a crime to merely receive a sext from someone under the age of consent, depending on the age difference between sender and recipient. According to the Cyberbullying Research Center, in twenty-seven of fifty U.S. states and the District of Columbia, the legal age of consent for sexual acts is sixteen years old and a sexting law is in place. In nine states the legal age for sexting is seventeen years old, and in eleven states, the age of consent is eighteen years old (CRC, 2022). Many teenagers believe it is acceptable to exchange sexts with someone they are dating or are sexually involved with, but this is not legally true.

Sending sexts can lead to serious social consequences if the images are shared or spread widely (Strasburger et al., 2019). When sexting occurs outside legal boundaries or includes coercion and pressure, it constitutes another form of sexual abuse and harassment, posing significant psychological risks for teens. Victims often experience anxiety, depression, and other mental health issues as a result. According to the Cyberbullying Research Center, approximately 12 percent of U.S. adolescents have been coerced into sending explicit images, highlighting the prevalence of this form of sexual victimization (Patchin & Hinduja, 2020).

Another form of sexual harassment is the use of deepfakes, digitally manipulated videos or images that create realistic but false representations of individuals. Sexually explicit deepfakes are of growing concern. Sharing them can be devastating to adolescents (Kristof, 2024). Victims can experience anxiety, depression, and harm to their personal and professional lives (Rousay, 2023). Protecting teens against sexual deepfakes requires a multifaceted approach, including educating them about the risks of sharing personal images online, promoting sufficient digital literacy to recognize and report deepfakes, and advocating for stronger legal protections and enforcement against their creation and distribution (Citron, 2019).

LINK TO LEARNING

Explore the emerging issue of AI-generated deepfakes (https://openstax.org/r/104AIdeepfake) and find help (https://openstax.org/r/104AIHelpSupprt) and support.

Best Practices for Healthy Media Use

How can we mitigate the risks associated with heavy media use? The American Academy of Pediatrics (AAP) (2016) recommends that pediatricians partner with parents and educators to communicate the effects of media, both positive and negative. Health-care professionals should also emphasize healthy activity levels (maximum of one hour of screen time per day) and adequate sleep for teens, recommend that children and teens not sleep with their electronic devices in their rooms, and advocate for media literacy programs in school curricula, youth organization programming, and family discussions.

The U.S. Surgeon General's advisory emphasizes making policy and program changes at the government level, like advocating for media literacy curricula in schools, requiring strict data privacy protections by tech companies that create apps used by teens, and continuing to research and develop usage guidelines (United States Department of Health & Human Services, 2023). Families are urged to develop a family media plan that sets boundaries for technology use at home and to create "tech-free" zones and time periods, such as family meals. Parents should also model appropriate media use for their children.

While phones can be a major source of distraction due to games and social media, they also offer valuable resources for media consumption, such as audiobooks, music, educational apps, and news. By setting clear guidelines and discussing the importance of balance, parents can help their teens develop healthy habits (AAP, 2016). Encouraging responsible use means setting time limits, promoting tech-free family times, and discussing the potential risks and benefits of various apps and online activities (Rideout & Robb, 2018). Recreational apps and games can also promote relaxation and improve cognitive skills like problem-solving and hand-eye coordination.

One particular form of media deserves a special focus: music. Listening to music is one of the hallmark behaviors of adolescence, and music is a part of youth culture that helps to connect each cohort. Robert Sapolsky (1998) posited that our interest in new music wanes at around age thirty-five years, and that the music we listen to in our teenage years largely forms the basis for our lifelong musical preferences. One study found that listening to music was the most common strategy teens use for self-regulation (Saarikallio & Erkkila, 2007). Other reasons for playing music are for entertainment, sensation-seeking, relaxing, discharge of energy, diversion, and solace (Baltazar, 2019). Developing a set of musical preferences is another way adolescents can explore and develop their identities. It's likely that teens (and adults) curate playlists in part so they can have music ready to help them cope with their changing emotional states (Cook et al., 2019). After a frustrating day at school, for example, a fifteen-year-old may listen to some heavy-metal music, nodding to the ferocious beats and discharging some of that negative energy, elevating her mood.

Education and Academic Achievement in Adolescent Development

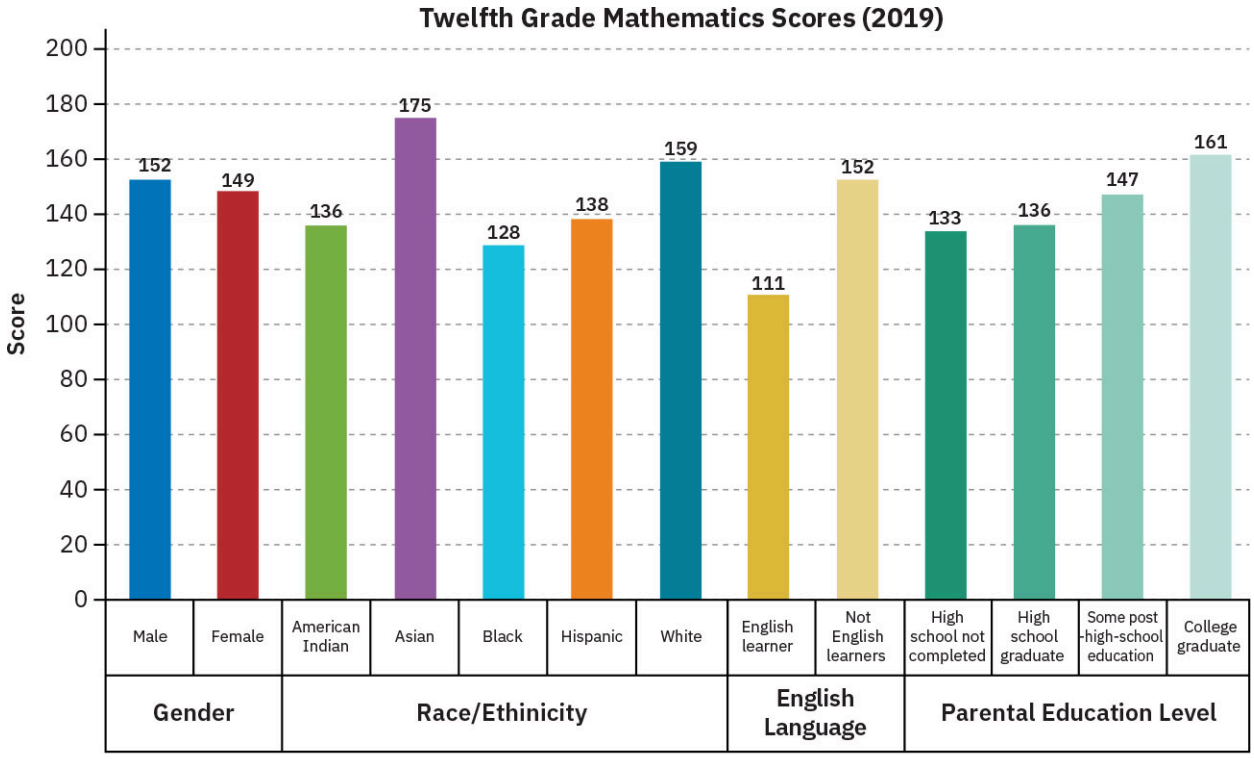
During adolescence, youth undergo significant cognitive development, including improvements in abstract thinking, problem-solving abilities, and critical reasoning skills. Therefore, educational materials and requirements should be appropriately challenging to stimulate cognitive growth without being overwhelming. Goodness of fit in education refers to the compatibility or alignment between the educational environment and the needs, abilities, and characteristics of individual students. We know that students come from diverse backgrounds; thus, an optimal learning experience would occur when these factors are appropriately matched with the educational context. For instance, offering a variety of teaching techniques and resources to accommodate diverse learning preferences and personal circumstances. Additionally, adolescents benefit from incorporating breaks and varied activities to maintain engagement and prevent fatigue. Academic achievement outcomes are multifaceted and heavily influenced by environmental contexts including family

and sociocultural factors and individual disparities.

Outcomes

What kinds of outcomes in academic achievement does schooling produce? The high school graduation rate for the United States overall was 86 percent in the 2018–2019 school year (NCES, 2021). This number has increased consistently since it was first tracked at the national level in 2011. Group-level differences were observed, however. For Asian-American/Pacific Islander students, the rate is 93 percent, for White students 89 percent, for Hispanic students 82 percent, for Black students 80 percent, and for Native American students 74 percent.

The U.S. Department of Education's National Center for Education Statistics (NCES) produces *The Nation's Report Card*, a semiannual snapshot of fourth-, eighth-, and twelfth-grade achievement in mathematics and reading, among other subject areas (NCES, 2021). The most recently available data for twelfth grade are for 2019, one year prior to the onset of the COVID-19 pandemic. For mathematics, 60 percent of twelfth-grade students met or exceeded the basic competence level nationwide, while just 24 percent met or exceeded what the NCES calls a "proficient" level of achievement (Figure 10.13). This represented a slight decrease in achievement compared with each assessment dating back to 2009. Males and females achieved at roughly similar levels.



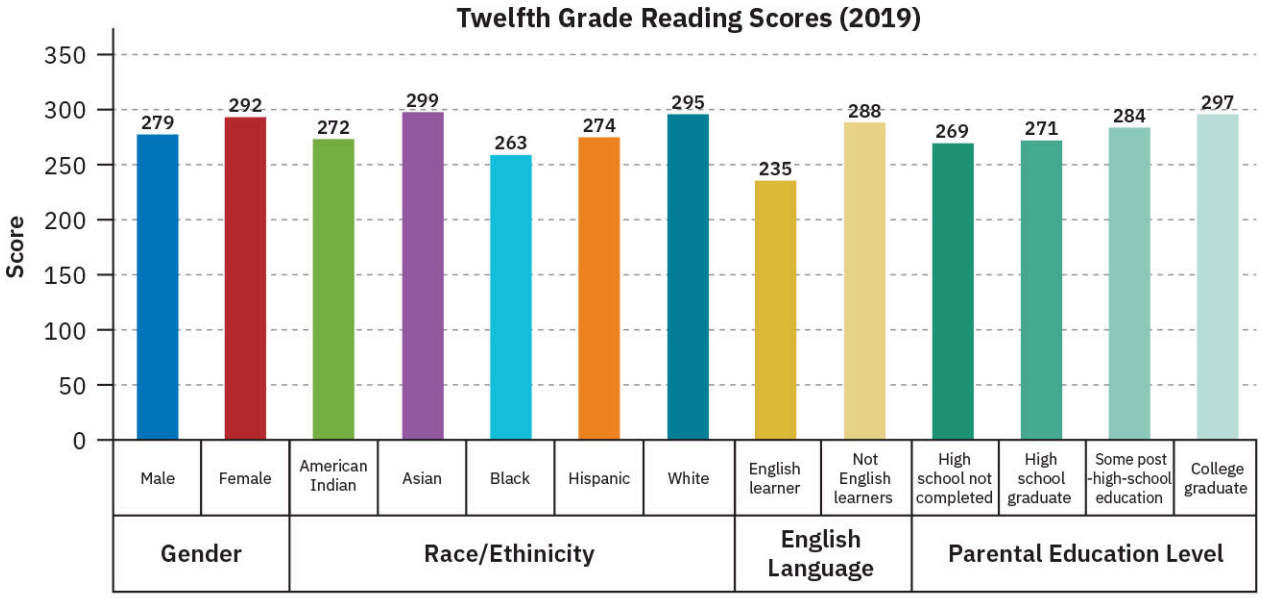
Source: U.S. Department of Education. (2022). NAEP Report Card: Mathematics.

FIGURE 10.13 Twelfth grade math scores show some range in proficiency based on various sociodemographic factors including gender, race/ethnicity, English language proficiency, and parental education. Note for example, the increase in scores as parent education level increases. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

There were significant mathematics achievement gaps between students from different ethnoracial groups, as well as for students from households with different parental levels of schooling, and also for students who were English-language learners. For example, students whose native language was not English showed the largest mathematics achievement gap compared to native English speakers. Finally, the greater the educational attainment of parents, the higher the mathematics achievement of their children: adolescent children of

college-educated parents scored higher on average than children whose parents did not graduate from high school. Educational attainment is one of the main components of socioeconomic status, an indicator of the level of social and economic resources a person or family has at their disposal. To support students, it is imperative that governments provide access to high-quality early childhood education programs to help level the playing field for students from disadvantaged backgrounds. Addressing disparities in disciplinary actions and providing culturally responsive curriculum and instruction can foster the academic success of marginalized and disadvantaged students. Finally, socioeconomically disadvantaged students often demonstrate remarkable resilience and perseverance and are highly motivated to succeed academically with the goal to improve their circumstances (Anyaka, 2017).

By twelfth grade, we see similar patterns emerging for reading achievement (Figure 10.14). The NCES reports slight declines in reading achievement levels between 2015 and 2019 for male students and for those whose parents had some education beyond high school (NCES, 2021). Otherwise, scores and achievement gaps between groups were stable for twelfth graders across that time period. Gaps include a difference in favor of students whose parents had graduated from college versus students from homes where the parents did not finish high school, and large achievement gaps between native English speakers and English language learners and between Asian and Black students.



Source: U.S. Department of Education. (2022). NAEP Report Card: Reading.

FIGURE 10.14 Twelfth-grade reading scores show some range in proficiency based on various sociodemographic factors including gender, race/ethnicity, English language proficiency, and parental education. Note for example the difference in scores between those learning English and those already proficient in English. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Sociodemographic Factors in Achievement Disparities

When the COVID-19 pandemic began in March 2020, children in the United States experienced major disruptions in schooling, particularly in socially and economically vulnerable groups (Bansak & Starr, 2021; Bailey et al., 2021; Maldonado & DeWitte, 2022). Parents from families with low incomes were more likely to be essential workers exposed to the COVID-19 virus and less likely to have access to high-quality health care (Berube & Bateman, 2020). Additionally, these families were less likely than families with higher income to have reliable internet access and computers at home, which made it harder for children in these homes to participate in online education (Stelitano et al., 2020).

Children in families with low income are also more likely to join public schools that lack the resources needed

to support teachers in delivering high-quality online instruction. Additionally, parents with low income are less able to provide extra instructional support through private tutoring and other enrichment activities (Lee et al., 2021). Research from China and Indonesia indicates that students in rural regions experienced more negative impacts after school closures during the pandemic compared to students in urban areas (e.g., Pasani et al., 2021).

Black teens are often aware of the racialized nature of achievement disparities. They are frequently reminded of these disparities in their schools as well as on social media (Hope et al., 2015). For example, a longitudinal study noted that adolescents' structural attributions (i.e., awareness of systemic and institutional factors that contribute to disparities) for racial achievement gaps increased from grade 10 to grade 12 (Bañales et al., 2020). However, when Black students recognize that such factors are rooted in historical and ongoing patterns of discrimination and inequality within educational systems and broader society, it works as an adaptive mechanism for their psychological development. When perceiving the causes of achievement disparities as external rather than internal, they see that their ability level is not fixed, which can help students establish a growth mindset and improve academic outcomes.

Ability grouping, also known as tracking, is a practice in education where students are placed into different classes or groups based on their perceived academic abilities or achievement levels. This practice involves assigning students into "tracks" based on their prior achievement or ability level (Loveless, 2013), such as "honors," "regular," or "remedial" classes, with each track offering varying levels of curriculum difficulty and academic rigor. The primary goal of this placement is to create a more uniform learning environment, allowing teachers to tailor their instruction more effectively to students' needs and enabling students to benefit from interactions with their peers (Steenbergen-Hu et al., 2016). However, it can promote educational inequalities, perpetuate stereotypes, and reinforce self-fulfilling prophecies, wherein students internalize and conform to expectations associated with their assigned track; this is especially seen among students belonging to ethnic minority groups and students of lower SES (e.g., Francis et al., 2017; Peterson et al., 2016). Furthermore, such separating of students based on "ability" contributes to achievement gaps between different social groups, as **stereotype threat** disproportionately affects marginalized students who are targets of negative stereotypes. Stereotype threat refers to the phenomenon where individuals experience anxiety or fear of confirming negative stereotypes about their social group, which can impair their performance in academic or other achievement-related tasks (Spencer et al., 2016).

LINK TO LEARNING

Do stereotypes affect your test scores? Learn about how [it turns out that stereotypes can affect (https://openstax.org/r/104StereotypeTst)](https://openstax.org/r/104StereotypeTst) you, whether you believe in them or not.

Familial and Sociocultural Factors in Academic Achievement and Disparities

The role of family, peer, and cultural influences on academic achievement trajectories is multifaceted and complex as myriad factors influence students' beliefs, behaviors, and experiences. At the familial level, there are SES, parental education level, parental involvement, as well as parental expectations. For example, the level of parental involvement in a child's education, including monitoring homework, attending school events, and communicating with teachers, is strongly associated with academic success (Harper et al., 2012).

At the social level, school climate, disciplinary practices, peer pressure, and influence of academic motivation are some of the forces that can drive a teen's academic achievement trajectory. School climate is defined as "the quality and character of school life," which is derived from "patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching, learning and leadership practices, and organizational structures" (Cohen et al., 2009, p. 182). Research shows that a positive school climate helps protect against the negative contribution of poor SES background on academic achievement (Berkowitz et al., 2017).

A longitudinal study conducted in Los Angeles high schools found that students who experienced authoritative school environments, characterized by high levels of support and structure, exhibited higher levels of self-efficacy and grit in subsequent years (Wong et al., 2021). Additionally, these students reported fewer depressive symptoms, less hopelessness, and reduced stress at school and about the future over time. The study highlights the significant association between a supportive and warm school climate and improved social-emotional health among adolescents. It suggests that interventions focusing on enhancing relationships with teachers and implementing supportive disciplinary practices may be beneficial for promoting the social-emotional well-being of students (Wong et al., 2021). Additionally, one's cultural capital, cultural values and beliefs about education, and cultural identity impact academic performance and achievement trajectory. Specifically, cultural resources such as language, knowledge, values, and traditions passed down within communities can influence students' academic achievement (e.g., Andersen & Jaeger, 2015).

School absenteeism (i.e., temporary periods of unexcused school absence) and permanent school dropout are both complex issues influenced by various risk factors that can occur at the individual, family, social, school, and community levels. According to the NCES (2018), 13 to 15 percent of eighth to twelfth graders were absent at least three days a month, and approximately 6 percent were absent at least five days a month. A comprehensive report from the U.S. Department of Education (2016) revealed that students with disabilities exhibited higher rates of chronic absenteeism compared to their peers without disabilities. Similarly, Native American and Pacific Islander students displayed a greater tendency for chronic absenteeism when compared to students from other racial and ethnic backgrounds. Additionally, non-ELL students were found to have a higher likelihood of chronic absenteeism in comparison to their ELL counterparts (Garcia & Weiss, 2018).

LINK TO LEARNING

Several years ago, Cleveland Public Schools discovered that over half of their students were persistently absent, missing at least 10 percent of school. Although they have made consistent efforts to tackle the issue, similar to many school districts nationwide, there is still considerable work to be done. Learn more about this issue at PBS News: Reduce chronic absenteeism from school (https://openstax.org/r/104Absenteeism) and what districts are doing to help students attend more consistently.

Understanding the reasons why teens drop out of high school is fundamental to improving intervention efforts to promote graduation. Risk factors for school absenteeism include negative attitudes toward school, problematic substance use, both externalizing and internalizing behaviors, and limited parent-school involvement (Gubbels et al., 2019). In terms of dropout, risk factors include a history of poor academic achievement, lower IQ, and learning difficulties (Gubbels et al., 2019). In addition, earlier research found extreme parental permissiveness to be associated with higher rates of dropping out (Rumberger et al., 1990). In a similar vein, researchers conducted a survey with young adults who left high school prior to completion. The researchers identified several influential stressors that increased the decision to leave school including mobility, family dynamics, peer influences, school engagement and environment, health issues, and involvement in crime. Issues related to school engagement and the overall school environment were among the most common reasons (McDermott et al., 2019). Hence, addressing the risk factors for school absenteeism and dropout requires a comprehensive, multifaceted approach that involves collaboration between schools, families, communities, and policymakers.

Interventions

Of note is a large-scale intervention undertaken in the United States in the 1950s and 1960s, namely the racial integration of schools (Pickren, 2004; Stanley, 2017). In *Brown v. Board of Education* (1954), the U.S. Supreme Court ruled that "separate but equal" educational access and services were inherently unequal and ordered an end to racial segregation in the U.S. education system. By the mid-1970s, the first Black students who were young children at the time of the original ruling and its reaffirmation ten years later showed dramatic increases in academic achievement on national standardized tests.

What this highlights is that large-scale improvements in social status and access to resources, along with a general push toward leveling the socioeconomic playing field, can have a big impact on learning for minority subgroups. This evidence points a path forward: as societies address equity gaps in a variety of domains of life, we should see generational increases in achievement levels (Hanushek et al., 2019). Over time, group-level achievement gaps should close with continued prevention and intervention efforts focused on creating equity.

The *Brown* decision is an example of a large-scale, societywide intervention. Psychologists working in educational settings also focus on identifying individual-level psychological factors that have some bearing on educational outcomes. Some key ones include self-determination theory (Ryan & Deci, 2017), expectancy-value theory (Harackiewicz et al., 2016), the stereotype threat process (Spencer et al., 2016), the concept of self-efficacy (Bandura, 1997; Schöber et al., 2018), and the collection of achievement motivation ideas currently known as growth mindset (Dweck, 2017). Across these diverse psychological processes and applications, one theme emerges: a student's level of achievement motivation is strongly sensitive to the social environment. Adolescent learners in particular are highly attuned to the achievement-related messages they receive from their peers, teachers, parents, and broader culture.

References

Abeele, M. V., Campbell, S. W., Eggermont, S., and Roe, K. (2014). Sexting, mobile porn use, and peer group dynamics: Boys' and girls' self-perceived popularity, need for popularity, and perceived peer pressure. *Media Psychology. 17*(1), 6–33. https://doi.org/10.1080/15213269.2013.801725American Academy of Pediatrics. (2016). Media and young minds. *Pediatrics, 138*(5), e20162591. https://doi.org/10.1542/peds.2016-2591

American Academy of Pediatrics. (2016, October 21). Policy on how to help parents manage young children's media use. AAP News. https://publications.aap.org/aapnews/news/12960?autologincheck=redirected

Aron, A., Fisher, H. E., & Strong, G. (2006). Romantic Love. In A. L. Vangelisti & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 595–614). Cambridge University Press. https://assets.cambridge.org/97805218/26174/frontmatter/9780521826174_frontmatter.pdf

Baltazar, M. (2019). Musical affect regulation in adolescents: A conceptual model. In K. McFerran, P. Derrington, & S. Saarikallio (Eds.), *Handbook of music, adolescents, and wellbeing* (pp. 65–74). Oxford University Press. https://psycnet.apa.org/doi/10.1093/oso/9780198808992.003.0006

Barroso, R., Ramião, E., Figueiredo, P., & Araújo, A. M. (2021). Abusive sexting in adolescence: Prevalence and characteristics of abusers and victims. *Frontiers in psychology, 12,* 610474. https://doi.org/10.3389/fpsyg.2021.610474

Basile, K. C., Clayton, H. B., DeGue, S., Gilford, J. W., Vagi, K. J., Suarez, N. A., Zwald, M. L., & Lowry, R. (2020). Interpersonal violence victimization among high school students—youth risk behavior survey, United States, 2019. *Morbidity and Mortality Weekly Report,* 69(1), 28–37. https://www.cdc.gov/mmwr/volumes/69/su/su6901a4.htm#suggestedcitation

Batchelder, H. R., Martz, D. M., Curtin, L., & Jameson, J. P. (2022). Interpersonal violence victimization and eating disorder behaviors in rural adolescents. *Journal of Rural Mental Health, 46*(2), 140–150. http://dx.doi.org/10.1037/rmh0000186

Bozzola, E., Spina, G., Agostiniani, R., Barni, S., Russo, R., Scarpato, E., Di Mauro, A., Di Stefano, A. V., Caruso, C., Corsello, G., & Staiano, A. (2022). The use of social media in children and adolescents: Scoping review on the potential risks. *International Journal of Environmental Research and Public Health, 19*(16), 9960. https://doi.org/10.3390/ijerph19169960

Brar, P., Boat, A. A., & Brady, S. S. (2023). But he loves me: Teens' comments about healthy and unhealthy romantic relationships. *Journal of adolescent research, 38*(4), 632–665. https://doi.org/10.1177%2F07435584221079726

Brown, B. B. (2004). Adolescents' relationships with peers. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology* (2nd ed., pp. 363–394. John Wiley & Sons. https://psycnet.apa.org/record/2004-12826-011

Brown, B. B., Herman, M., Hamm, J. V., & Heck, D. J. (2008). Ethnicity and image: Correlates of crowd affiliation among ethnic minority youth. *Child Development, 79*(3), 529–546. https://doi.org/10.1111/j.1467-8624.2008.01141.x

Brown, B. B., & Larson, J. (2009). Peer relationships in adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology: Contextual influences on adolescent development* (3rd ed., pp. 74–103). John Wiley & Sons. https://psycnet.apa.org/doi/10.1002/9780470479193.adlpsy002004

Carroll, J. S., Willoughby, B., Badger, S., Nelson, L. J., McNamara, Barry C., Madsen, S. D. (2007). So close, yet so far away: The impact of varying marital horizons on emerging adulthood. *Journal of Adolescent Research, 22*(3), 219–247. https://doi.org/10.1177/0743558407299

Casper, D. M., Card, N. A., & Barlow, C. (2020). Relational aggression and victimization during adolescence: A meta-analytic review of unique associations with popularity, peer acceptance, rejection, and friendship characteristics. *Journal of Adolescence, 80,* 41–52. https://doi.org/10.1016/j.adolescence.2019.12.012

Cava, M. J., Tomás, I., Buelga, S., & Carrascosa, L. (2020). Loneliness, depressive mood and cyberbullying victimization in adolescent victims of cyber dating violence. *International Journal of Environmental Research and Public Health, 17*(12), 4269.

Centers for Disease Control and Prevention. (2024, January 23). About sexual violence. *Sexual violence prevention.* U.S. Department of Health and Human Services. https://www.cdc.gov/sexual-violence/about/?CDC_AAref_Val=https://www.cdc.gov/violenceprevention/sexualviolence/fastfact.html

Chesney-Lind, M., & Irwin, K. (2008). *Beyond bad girls: Gender, violence and hype.* Routledge. https://doi.org/10.4324/9780203940860

Centers for Disease Control and Prevention. (2024). About teen dating violence. *Intimate Partner Violence Prevention.* U.S. Department of Health and Human Services. https://www.cdc.gov/intimate-partner-violence/about/about-teen-dating-violence.html

Choi, H. J., Cooke, J. E., Madigan, S., & Temple, J. R. (2022). The impact of parent-child closeness and romantic attachment on dating violence perpetration in adolescence. *Journal of Interpersonal Violence, 37*(23–24). https://doi.org/10.1177/08862605211072160

Citron, D. K. (2019). Sexual privacy. *Yale Law Journal, 128*(7), 1870–1960. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3233805

Clayton, H. B. (2023, April 28). Dating violence, sexual violence, and bullying victimization among high school students—Youth risk behavior survey, United States, 2021. *Morbidity and Mortality Weekly Report, 72*(1), 66–74. http://dx.doi.org/10.15585/mmwr.su7201a8

Collins, W. A. (2003). More than myth: The developmental significance of romantic relationships during adolescence. *Journal of Research on Adolescence, 13*(1), 1–24. https://doi.org/10.1111/1532-7795.1301001

Connolly, J. A., & McIsaac, C. (2009). Romantic relationships in adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., vol. 2, pp. 101–151). Wiley. https://doi.org/10.1002/9780470479193.adlpsy002005

Cook, T., Roy, A. R. K., & Welker, K. M. (2019). Music as an emotion regulation strategy: An examination of genres of music and their roles in emotion regulation. *Psychology of Music, 47*(1), 144–154. https://doi.org/10.1177/0305735617734627

Costello, M. A., Allen, J. P., Womack, S. R., Loeb, E. L., Stern, J. A., & Pettit, C. (2023). Characterizing emotional support development: From adolescent best friendships to young adult Romantic relationships. *Journal of Research on Adolescence, 33*(2), 389–403. https://doi.org/10.1111/jora.12809

Crabbe, R., Pivnick, L. K., Bates, J., Gordon, R. A., & Crosnoe, R. (2019). Contemporary college students' reflections on their high school peer crowds. *Journal of Adolescent Research, 34*(5), 563–596. https://doi.org/10.1177%2F0743558418809537

Cyberbullying Research Center. (2022). *Sexting laws across America.* https://cyberbullying.org/sexting-laws

Dane, A., & Bhatia, K. (2023). The social media diet: A scoping review to investigate the association between social media, body image and eating disorders amongst young people. *PLOS Global Public Health, 3*(3), e0001091. https://doi.org/10.1371/journal.pgph.0001091

Dinero, R. E., Conger, R. D., Shaver, P. R., Widaman, K. F., & Larsen-Rife, D. (2008). Influence of family of origin and adult romantic partners on romantic attachment security. *Journal of Family Psychology, 22*(4), 622–632. https://doi.org/10.1037/a0012506

Dmitrieva, J., Gibson, L., Steinberg, L., Piquero, A., & Fagan, J. (2014). Predictors and consequences of gang membership: Comparing gang members, gang leaders, and non–gang-affiliated adjudicated youth. *Journal of Research on Adolescence, 24*(2), 220–234. https://doi.org/10.1111/jora.12111

Elkind, D. (1998). *Reinventing childhood: Raising and educating children in a changing world.* Modern Learning Press. https://archive.org/details/reinventingchild00elki

Exner-Cortens, D., Eckenrode, J., & Rothman, E. (2013). Longitudinal associations between teen dating violence victimization and adverse health outcomes. *Pediatrics,*

131(1), 71–78. https://doi.org/10.1542/peds.2012-1029
Fankhauser, P. (2018). Novel findings on gender differences in self-disclosure: The sharing of personal information in Japanese students' close friendships. *Vienna Journal of East Asian Studies, 10*(1), 1–30. http://dx.doi.org/10.2478/vjeas-2018-0001
Foshee, V. A., Reyes, L. M., Agnew-Brune, C. B., Simon, T. R., Vagi, K. J., Lee, R. D., & Suchindran, C. (2014). The effects of the evidence-based Safe Dates dating abuse prevention program on other youth violence outcomes. *Prevention Science, 15*(6), 907–916. https://doi.org/10.1007/s11121-014-0472-4
Grossman, K., Grossman, K. E., & Kindler, H. (2005). Early care and the roots of attachment and partnership representations: The Bielefeld and Regensburg longitudinal studies. In K. E. Grossmann, K. Grossmann, & E. Waters (Eds.), *Attachment from infancy to adulthood: The major longitudinal studies* (pp. 98–136). Guilford Press. https://www.psychomedia.it/rapaport-klein/steele05-06.pdf
Giordano, A. L., Schmit, M. K., Clement, K., Potts, E. E., & Graham, A. R. (2022). Pornography use and sexting trends among American adolescents: Data to inform school counseling programming and practice. *Professional School Counseling, 26*(1). https://doi.org/10.1177/2156759X221137287
Haidt, J. (2024). *The anxious generation: How the great rewiring of childhood is causing an epidemic of mental illness*. Random House. https://doi.org/10.1016/j.jaac.2024.08.004
Halford, W. K. (2011). *Marriage and relationship education: What works and how to provide it*. Guilford Press.
Hamilton, J. L., Dreier, M. J., & Boyd, S. I. (2023). Social media as a bridge and a window: The changing relationship of adolescents with social media and digital platforms. *Current Opinion in Psychology, 52*, 101633. https://doi.org/10.1016/j.copsyc.2023.101633
Hamilton, R. C. (2010). Relational aggression and the impact it has on female adolescents (Publication No. 44) [Doctoral dissertation, The College at Brockport]. College Education Master's Theses. https://api.semanticscholar.org/CorpusID:145327455
Havighurst, R. J. (1973). History of developmental psychology: Socialization and personality development through the life span. In P. B. Baltes & K. W. Schaie (Eds.), *Life-span developmental psychology* (pp. 3–24). Academic Press. https://doi.org/10.1016/B978-0-12-077150-9.50007-1
Hawkley, L. C., & Capitanio, J. P. (2015). Perceived social isolation, evolutionary fitness and health outcomes: A lifespan approach. *Philosophical Transactions of the Royal Society, Series B, biological sciences, 370*(1669), 20140114. https://doi.org/10.1098/rstb.2014.0114
Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511–524. https://doi.org/10.1111/1532-7795.1301001
Hébert, M., Blais, M., & Lavoie, F. (2017). Prevalence of teen dating victimization among a representative sample of high school students in Quebec. *International Journal of Clinical and Health Psychology, 17*(3), 225–233. https://doi.org/10.1016/j.ijchp.2017.06.001
Jorgensen-Wells, M. A., James, S. L., & Holmes, E. K. (2021). Attachment development in adolescent romantic relationships: A conceptual model. *Journal of Family Theory & Review, 13*(4), 128–142. http://dx.doi.org/10.1111/jftr.12409
Kitts, J. A., & Leal, D. F. (2021). What is (n't) a friend? Dimensions of the friendship concept among adolescents. *Social Networks, 66*, 161–170. https://doi.org/10.1016/j.socnet.2021.01.004
Ko, P.-C., Buskens, V., & Wu, C.-I. (2015). The interplay between gender and structure: Dynamics of adolescent friendships in single-gender classes and mixed-gender classes. *Journal of Research on Adolescence, 25*(2), 387–401. https://psycnet.apa.org/doi/10.1111/jora.12136
Kristof, Nicholas. (2024, March 23). The online degradation of women and girls that we meet with a shrug. *The New York Times*. https://www.nytimes.com/2024/03/23/opinion/deepfake-sex-videos.html?smid=em-share
Kwon, K., & Lease, A. M. (2007). Clique membership and social adjustment in children's same-gender cliques: The contribution of the type of clique to children's self-reported adjustment. *Merrill-Palmer Quarterly, 53*(2), 216–242. https://psycnet.apa.org/doi/10.1353/mpq.2007.0012
Laursen, B., & Hartl, A. C. (2013). Understanding loneliness during adolescence: Developmental changes that increase the risk of perceived social isolation. *Journal of Adolescence, 36*(6), 1261–1268. https://doi.org/10.1016/j.adolescence.2013.06.003
Lewycka, S., Clark, T., Peiris-John, R., Fenaughty, J., Bullen, P., Denny, S., & Fleming, T. (2018). Downwards trends in adolescent risk-taking behaviors in New Zealand: Exploring driving forces for change. *Journal of Pediatrics and Child Health, 54*(6), 602–608. https://doi.org/10.1111/jpc.13930
Long, E., Zucca, C., & Sweeting, H. (2021). School climate, peer relationships, and adolescent mental health: A social ecological perspective. *Youth & Society, 53*(8), 1400–1415. https://doi.org/10.1177/0044118x20970232
Lorijn, S. J., Engels, M. C., Huisman, M., & Veenstra, R. (2022). Long-term effects of acceptance and rejection by parents and peers on educational attainment: A study from pre-adolescence to early adulthood. *Journal of Youth and Adolescence, 51*(3), 540–555. https://doi.org/10.1007/s10964-021-01506-z
Lunde, C., & Joleby, M. (2023). Being under pressure to sext: Adolescents' experiences, reactions, and counter-strategies. *Journal of Research on Adolescence, 33*(1), 188–201. https://doi.org/10.1111/jora.12797
Manning, M. L. (2002). Havighurst's developmental tasks, young adolescents, and diversity. *The Clearing House, 76*(2), 75–78. https://doi.org/10.1080/00098650209604953
Marciano, L., Ostroumova, M., Schulz, P. J., & Camerini, A. L. (2022). Digital media use and adolescents' mental health during the Covid-19 pandemic: A systematic review and meta-analysis. *Frontiers in public health, 9*, 793868. https://doi.org/10.3389/fpubh.2021.793868
McFarland, D. A., Moody, J., Diehl, D., Smith, J. A., & Thomas, R. J. (2014). Network ecology and adolescent social structure. *American sociological review, 79*(6), 1088–1121. https://doi.org/10.1177%2F0003122414554001
Mortimer, J. T. (2010). The benefits and risks of adolescent employment. *The Prevention Researcher, 17*(2), 8–11. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2936460/
Patchin, J. W., & Hinduja, S. (2020). It is time to teach safe sexting. *Journal of Adolescent Health, 66*(2), 140–143. https://doi.org/10.1016/j.jadohealth.2019.10.010
Pattiselanno, K., Dijkstra, J. K., Steglich, C., Vollebergh, W., & Veenstra, R. (2015). Structure matters: The role of clique hierarchy in the relationship between adolescent social status and aggression and prosociality. *Journal of youth and adolescence, 44*(12), 2257–2274. https://doi.org/10.1007/s10964-015-0310-4
Piolanti, A., Waller, F., Schmid, I. E., & Foran, H. M. (2023). Long-term adverse outcomes associated with teen dating violence: A systematic review. *Pediatrics, 151*(6). https://doi.org/10.1542/peds.2022-059654
Ramsey, N., Obeidallah, M., & Abraham, A. (2023). Impact of Covid-19 on adolescent health and use of social media. *Current Opinion in Pediatrics, 35*(3), 362–367. https://doi.org/10.1097/mop.0000000000001248
Rideout, V. J., & Robb, M. B. (2018). *The Common Sense Census: Media use by tweens and teens.* Common Sense Media. https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf
Rideout, V. J., & Robb, M. B. (2021). *The role of media during the pandemic: Connection, creativity, and learning for tweens and teens.* San Francisco, CA: Common Sense. https://www.commonsensemedia.org/sites/default/files/research/report/8-18-role-of-media-research-report-final-web.pdf
Rousay, V. (2023). *Sexual deepfakes and image-based sxual abuse: Victim-survivor experiences and embodied harms* [Doctoral dissertation, Harvard University]. https://www.researchgate.net/publication/370324689_Sexual_Deepfakes_and_Image-Based_Sexual_Abuse_Victim-Survivor_Experiences_and_Embodied_Harms
Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., pp. 571–645). John Wiley & Sons. https://doi.org/10.1002/9780470147658.chpsy0310
Saarikallio, S., & Erkkilä, J. (2007). The role of music in adolescents' mood regulation. *Psychology of Music, 35*(1), 88–109. https://psycnet.apa.org/doi/10.1177/0305735607068889
Sapolsky, R. (1998, March 22). Open season. *The New Yorker* (p. 57). https://www.newyorker.com/magazine/1998/03/30/open-season-2
Smith, L. W., Liu, B., Degenhardt, L., Richters, J., Patton, G., Wand, H., Cross, D., Hocking, J. S., Skinner, S. R., Cooper, S., Lumby, C., Kaldor, J. M., & Guy, R. (2016). Is sexual content in new media linked to sexual risk behaviour in young people? A systematic review and meta-analysis. *Sexual Health, 13*(6), 501–515. https://doi.org/10.1071/sh16037
Sorensen, S. (2007). Adolescent romantic relationships. *Research facts and findings*, 1-4. https://actforyouth.net/resources/rf/rf_romantic_0707.cfm
Stavropoulos, V., Mastrotheodoros, S., Burleigh, T. L., Papadopoulos, N., & Gomez, R. (2018). Avoidant romantic attachment in adolescence: Gender, excessive internet use and romantic relationship engagement effects. *PLoS ONE, 13*(7). https://doi.org/10.1371/journal.pone.0201176
Strasburger, V. C., Zimmerman, H., Temple, J. R., & Madigan, S. (2019). Teenagers, sexting, and the law. *Pediatrics, 143*(5). https://doi.org/10.1542/peds.2018-3183
Tan, J. S., Hessel, E. T., Loeb, E. L., Schad, M. M., Allen, J. P., & Chango, J. M. (2016). Long-term predictions from early adolescent attachment state of mind to romantic relationship behaviors. *Journal of Research on Adolescence, 26*(4), 1022–1035. https://doi.org/10.1111/jora.12256
Twenge, J. M. (2020). Increases in depression, self-harm, and suicide among U.S. adolescents after 2012 and links to technology use: Possible mechanisms. *Psychiatric Research and Clinical Practice, 2*(1), 19–25. https://doi.org/10.1176/appi.prcp.20190015
United States Department of Health & Human Services (2023). Surgeon general issues new advisory about effects social media use has on youth mental health. https://www.hhs.gov/about/news/2023/05/23/surgeon-general-issues-new-advisory-about-effects-social-media-use-has-youth-mental-health.html
Vogels, E. A., Gelles-Watnick. R., & Massarat, N. (2022, August 10). *Teens, social media and technology 2022*. Pew Research Center. https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/
Wentzel, K. R. (2005). Peer relationships, motivation, and academic performance at school. *Handbook of competence and motivation* (2nd ed., pp. 586–603). https://psycnet.apa.org/record/2017-17591-031
Wesche, R., Kreager, D. A., Ramirez, N. G., & Gupta, S. (2023). Dating and friendships in adolescence: Variation across same-sex and other-sex romantic partners. *Journal of Research on Adolescence, 33*(4), 1131–1142. https://doi.org/10.1111/jora.12865
Wincentak, K., Connolly, J., & Card, N. (2017). Teen dating violence: A meta-analytic review of prevalence rates. *Psychology of Violence, 7*(2), 224–241. https://doi.org/10.1037/a0040194
Zhao, Q., & Li, C. (2022). The roles of clique status hierarchy and aggression norms in victimized adolescents' aggressive behavior. *Journal of youth and adolescence,*

51(12), 2328–2339. https://doi.org/10.1007/s10964-022-01677-3

10.5 Family and Community Contexts in Adolescence

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the impact of various parenting styles on development during adolescence
- Identify sources of parent-adolescent conflict
- Discuss assets and activities related to positive youth development

Fifteen-year-old Michael wakes up twenty minutes early each day so he can help his younger brother get ready for school. While his stepmother is downstairs hurriedly stirring eggs on the stove while getting dressed for work and feeding the dog, Michael reminds his brother to make his bed before he heads downstairs. After breakfast Michael's stepmother looks for the car keys. But Michael is already outside, having taken the keys to warm up the car on this wintry morning. Later that morning, while in school, Michael receives a text from his stepmom: "Thank you for helping us this morning. Pizza for dinner? I love you!" After school, the brothers go to the after-school program offered at the nearby community center. Michael does homework while his brother plays with his friends in the gym. Both are excited to see their stepmother's car pull up shortly after 5 p.m. Time for pizza!

Family life is a central feature in the lives of adolescents, serving as the anchor for their experiences. Caregivers and family structure play an important role in teenager's lives, as does the influence of the broader community.

The Influence of Parenting Styles

Although adolescence is a time of gradual turning toward the broader society, parents are still obviously an important source of support and guidance in adolescents' lives. Recall the four main clusters of parenting styles: authoritative (high warmth, high structure), indulgent or permissive (high warmth, low structure), authoritarian (low warmth, high structure) and neglectful or uninvolved (low warmth, low structure) (Baumrind, 1971; Maccoby & Martin, 1983).

The authoritative parenting style is associated with many positive outcomes for adolescents, just as it is for younger children (Figure 10.15). These outcomes include a more positive self-concept, more positive orientation toward school and academic competence, and fewer problem behaviors (Dagnew, 2015; Febiyanti & Rachmawati, 2021; Steinberg, et al., 1994). In a follow-up, researchers found these outcomes held steady one year later, explaining that parenting style at that point helped maintain adolescents' positive adjustment (Steinberg et al., 1994). Another study examined the relationships between parenting styles, academic self-concept, academic motivation, and academic achievement among Ethiopian students. The findings showed that the authoritative parenting style had a positive correlation with academic achievement, while authoritarian and permissive styles had negative correlations; there was no significant relationship with the neglectful style. Academic self-concept, intrinsic motivation, and extrinsic motivation were all positively related to academic achievement (Dagnew, 2015). As you might expect, the opposite pattern was found for the neglectful parenting style, and the outcomes for adolescents of authoritarian and permissive styles fell somewhere between.

FIGURE 10.15 Many families maintain warmth and closeness in adolescence, and this is particularly common in authoritative households. This can be facilitated through shared activities. Contrary to the popular media notion that adolescents and parents are perpetually in conflict, many families get along quite well. (credit: modification of work "Family enjoying view from Dog Mountain" by U.S. Forest Service- Pacific Northwest Region/Flickr, Public Domain)

A wealth of studies sought to replicate and extend Baumrind's parenting-style theory, focusing on two underlying dimensions that help explain how parenting style is related to adolescent outcomes: warmth (level of responsiveness to the child's needs) and structure (level of demands and rules for age-appropriate behavior). First, given that a central developmental task for adolescents is to assume control and responsibility for their own behavior, called developing behavioral autonomy, it makes sense that the responsiveness and clearly communicated expectations in authoritative parenting create an ideal environment for this task. Parental authority is respected, even as the teen increases their own sense of behavioral autonomy. Second, the expectations of authoritarian parenting can come across as unwelcome and interfere with growing behavioral autonomy (Bi et al., 2018).

IT DEPENDS

Can Your Parent Be Your Friend?

An intriguing question is whether a caregiver can or even should be considered a "friend" of their child. On one hand, we might say yes. Parents and children/adolescents are in a very close, emotionally significant relationship and spend a lot of time together. From another perspective, we could say no because caregivers and children/adolescents play very different roles, with different responsibilities, concerns, and amount of power.

Baumrind's research (1971) on parenting styles can help us make sense of this question by focusing on what is in the best interest of the child or adolescent. As you've learned, the authoritative parenting style is considered the most conducive to supporting appropriate development of children and adolescents. The winning combination of clear expectations and guidelines for behavior, communicated within a warm and loving relationship, helps developing adolescents understand and internalize the underlying reasons for the expectations. Researchers have found that teens actually prefer to have guidance, because it gives them a sense of security and direction in a rather complex world (Collins & Steinberg, 2006; Elkind, 1998).

The permissive style of parenting includes the warmth and daily involvement of the authoritative style but lacks the necessary guidance. Permissive parents often see themselves as friends of their children and are uncomfortable about or unwilling to set limits, perhaps to avoid disappointing their child or upsetting them. Although this avoids conflict in the moment, the developing teenager is left with little guidance and faces a bewildering number of decisions and scenarios across adolescence without parental guardrails to guide them (Elkind, 1998).

The findings are clear: across a wide range of cultures and family types, adolescents and younger children do well when caregivers give them both warmth and structure. The way caregivers achieve this balance can differ based on their family dynamics and various contextual factors in the child's environment.

Parent-Teen Conflict

A common notion about adolescence is that a high level of stress or conflict always arises between teens and parents. While hormonal fluctuations can play a small role in the day-to-day moods of developing teens, such temporary irritability can't account for the full nature of the conflict developmental psychologists have studied. Strife between teens and parents does heighten during the adolescent period, but it becomes less frequent as adolescence progresses (Shanahan, et al., 2007). The emotional intensity and stakes tend to increase, however, perhaps accounting for the overall perception that adolescence is a period of high discord (De Goede et al., 2009). Given that psychologists have noted the functional role of conflict, it's reasonable to suspect that this common feature of adolescence might serve a purpose, and that perspective may also help us understand its common sources.

Adolescents undergo dramatic physical, cognitive, and self- and social redefinition. Parent-adolescent conflict could be both a driver of this redefining of roles and qualities, and a consequence of it (Branje et al., 2012; Collins & Sternberg, 2006). Adolescents' new reasoning skills, including hypothetical-deductive reasoning and the ability to think abstractly, often lead to the **de-idealization** of parents. That is, teens see a mismatch between the values their parents proclaim, the rules they put forward, and the way imperfect parents lead their own imperfect lives. Those same reasoning skills—which parents, teachers, and society at large all encourage—can lead adolescents to imagine an alternative world in which the rules are just a bit different, and not so "unfair." One way parents can avoid this tension and struggle is by simply admitting when they make mistakes and taking steps to involve the adolescent in open family communication regarding major decisions or interpersonal conflicts.

Across adolescence, autonomy and self-determination grow, and the roles teenagers take on change as they are granted more responsibility (Mastrotheodoros et al., 2019). Teens' changing physicality also means that parents and other adults in the community may expect more adultlike behavior from them as they start to look more like grown-ups on the outside, but it is important to remember that on the inside, their frontal lobes are not yet finished developing. When teens make mistakes, both they and their parents might feel disappointment and frustration. Adolescent-parent conflict makes sense, then, when we consider the totality of the psychological and social circumstances in which adolescents find themselves. The negotiation and resolution of this friction can lead to a more egalitarian relationship between parent and child (Branje, 2018). Conflict declines with the parent's gradual release of control as the adolescent learns to make their way in the larger world. Arguments about household chores, curfews, appearance and dress, use of a family car, and spending money all make sense from this developmental perspective. Allowing teens more freedom within a structured environment can reduce conflict and improve family well-being. Adolescent-caregiver relationships are more likely to stay healthy and harmonious when adolescents believe that their caregiver's rules are there for a good reason and are reasonable, and when caregivers and adolescents continue to have open, respectful communication (Smetana et al., 2006).

Family Structure

Developmental psychologists have long been interested in the role family structure may play in child and adolescent outcomes. Researchers have investigated a variety of such structures, including two-parent families, single-parent families, multigenerational families, and step- or blended families. The differences observed are probably due to the different ways family members function and interact with one another more so than to the family structures themselves. In other words, many different family types can thrive or have difficulties, often based on complicated contextual factors such as family resources. Disparities in resources, such as available income and the ability to monitor children, also factor heavily in producing different outcomes.

Decades of research on family structure and outcomes have shown a consistent pattern: children and adolescents in two-parent households fare better across a range of physical and psychological measures of well-being (Savell, et al., 2023; Langton & Berger, 2011; Parache, et al., 2023). A higher percentage of adolescents in both single-parent and stepfamily households exhibit more negative behavioral conduct (such as acting out) and higher levels of depression and anxiety than adolescents in two-parent households (Parche, et al., 2023).

In a longitudinal study of German families, adolescents in stepfamilies reported particularly low-quality relationships with their parents, compared to teens in single- or two- parent families (Walper & Beckh, 2010). Similarly, in a longitudinal study of families in the United States, disruptive behavior reported by teachers was lowest for children in two-parent families (Savell, et al., 2021). Another study using a large-scale national survey in the United States found adolescents in two-parent families often had better overall physical health than those in all other family structures (Langton & Berger, 2011). This may be because having two caregivers to share the various family roles and responsibilities can reduce caregiver stress.

This pattern was also reported in a recent large-scale national survey of Korean youth (Park & Lee, 2020), with some additional findings: adolescents from families other than two-parent households showed higher levels of risky behavior such as drinking and smoking, higher levels of suicidal ideation, more stress, and lower perceived level of academic performance. In essence, the scientific literature has been reporting the comparative benefits of the two-parent family for quite some time. But what is it exactly about family structure that causes these observed outcomes?

Recently, scholars have noted that two-parent (sometimes called “intact”) families have enjoyed a type of privilege in both our culture and scientific investigations. They have sought to identify the links between a family’s composition and the well-being of its members.

Socioeconomic status is one such link. Studies of families in the United States (Savell, et al. 2023) and Germany (Parache, et al., 2023) found strong associations between SES and adolescent well-being. Two-parent households typically have more income and other resources (such as time) available for benefiting household members. The financial strain that comes from having fewer resources could contribute additional stress in other family structures. Other factors include the level of parental monitoring and parental ability to protect family members from adverse health conditions that result in accidents and injury (Langton & Berger, 2011). The negative findings for stepfamilies may seem confusing since these families have two parents. However, stepfamilies tend to experience lower income levels, greater potential for within-family conflict, and less stability.

Government policies and programs can be informed by recognizing the role these factors likely play in child and adolescent outcomes. For example, as a society, we may look for ways to support single-parent households financially through tax breaks or other programs in order to increase positive outcomes for children and adolescents living in this common family structure.

Assets and Activities Supporting Positive Adolescent Development

In considering how to support optimal conditions for adolescent development, researchers at the Search Institute (Pekel et al., 2015) created what is called the developmental assets approach. It identifies twenty internal qualities and twenty external qualities that should be nurtured during youth. The external qualities include those that can be supported through resources like families, educational environments, and the broader community. Examples include positive peer influences, motivation to achieve, family support, and a favorable outlook of one's future. Research suggests that development of these assets is aligned with behaviors such as having academic success, valuing diversity, helping others, resisting risky behaviors, and having the ability to overcome adversity (Pekel et al., 2015). The goal is to ensure that, as teens mature, they benefit from a community that values and includes them in decision-making, provides a safe environment, and sets clear expectations and boundaries (Roehlkepartain, 2015). A supportive environment allows adolescents to engage in meaningful activities, align with like-minded peers, and contribute to their community.

This approach to applying developmental psychology to improve lives aligns with the positive youth development perspective (Lerner, 2005; Lerner, Dowling & Anderson, 2003; Roth, et al., 1998), which integrates various protective factors and resources to foster healthy development in children and adolescents. Positive youth development focuses on promoting positive outcomes and emphasizes a hopeful environment and opportunities for growth by engaging youth in a variety of enrichment and health promotion programs. According to Lerner and colleagues (2005), positive youth development programs should focus on five "C"s: competence, character, confidence, connections, and compassion (Lerner, et al., 2005), and should set high expectations for achievement and provide continuous support, mirroring high-quality parenting and educational best practices. According to the CDC, these types of programs can strengthen an adolescent's sense of identity as well as their competence in social, emotional, cognitive, and behavioral domains (CDC, 2022).

Availability of and access to youth activities and programs can vary greatly. Your community's school system and local library may be good resources for learning more about what offerings are available in your community. Many programs are run through governmental resources including school systems, nonprofit groups, faith-based entities, and recreational organizations.

Community programs may be run through local government sectors (like a public library), or the combined efforts of those with others in the community, such as area businesses in the Chamber of Commerce, or local branches of nonprofit organizations such as Girls Who Code. The 4-H program is an example of a national youth development organization run in association with the extension/outreach divisions of universities with programs that seek to promote activities like service to the community and a healthy lifestyle. A comprehensive evaluation of 4-H (Lerner et al., 2015) identified a number of long-term benefits such as a higher level of engaged citizenship through high school, decreased risk for problem behaviors, higher academic performance, and a greater tendency to endorse and exhibit health-promoting attitudes and behaviors. Involvement in community programs like these can help developing adolescents to explore new interests, learn more about their communities, and consider roles they may want to continue within these contexts (Figure 10.15).

(a)

(b)

FIGURE 10.16 Youth activities that foster positive development are available through various community groups and organizations. (a) Teens learn about the City of Greenville's video production control room as part of a "Grow Local" initiative that brings high school students to visit various area organizations and businesses in Greenville, North Carolina. (b) This 4-H group helped with trail maintenance and planted a butterfly garden as part of its Outdoor Wildlife Leadership Service project in the Land Between the Lakes National Recreation Area in Kentucky. (credit a: modification of work "Grow Local – City Government" by City of Greenville, North Carolina/Flickr, Public Domain; credit b: modification of work "4H Group at Brandon Spring Group Center" by Land Between the Lakes KY/TN/Flickr, Public Domain)

Many communities have recreational departments that offer youth activities, often including organized sports; classes in art, music, and dance; and various camp-type programs for specific interests. Recreational opportunities are often available through organizations like Girl Scouts and Scouting America, which encourage youth to try new things, help others, improve self-confidence, and build strong ethical standards—and in the case of Girl Scouts, develop financial literacy (Girl Scout Research Institute, 2020; Modi et al., 2012). Recent studies highlight the positive impact of scouting on youth development, such as higher levels of civic engagement and social responsibility (Kim et al., 2016; Polson et al., 2013) and improved mental health and resilience (Wang et al., 2021).

Organized sports offer another important context for positive youth development, with programs offered through school systems, local government recreational programs, and other sports organizations. The benefits of participation in sports include better mental health outcomes (reduced anxiety and depression), increased leadership and team-building skills including cooperation and other prosocial behaviors, and positive effects on physical health and overall physical development. According to the Project Play study, regular participation in a team sport among teenagers between ages thirteen and seventeen years in the United States was at 36 percent in 2022. However, these programs are often less accessible to those in low SES households due to factors such as affordability and transportation (Aspen Institute Project Play, 2023). And although high schools in the United States have increased their awareness and access to adaptive sports programs (Carbone et al., 2021), in recent years, there has also been a decline in the participation and activity levels of youth with disabilities (MacEachern et al., 2021).

LINK TO LEARNING

Is playing sports as beneficial as commonly believed, or are we over-focused on sports? Watch this TED-Ed talk titled *How playing sports benefits your body ...and your brain* (https://openstax.org/r/104SportsBrain) to learn more.

Some teens may choose to become involved in faith-based groups. This may entail participating in important stages of religious development during adolescence, such as a bar mitzvah or religion classes (Figure 10.17).

Other activities connected to faith groups may be more social in nature, offering teens peer group support. Fifty-one percent of all U.S. teenagers have attended a religious youth group at some point in their lives, while 29 percent currently attend such group meetings regularly (Pew Research Center, 2020). Being curious about their spirituality, the meaning and purpose of life, and their place in the universe is a common characteristic of adolescents, including those who profess no particular religion (Pew Research Center, 2019). A recent study surveyed Singaporean youth and found that individuals with a religion had higher overall positive mental health scores than those without, and that various religions had different benefits: Christianity was linked to higher emotional support; Taoism, Buddhism, and Islam with better coping and support; Hinduism with better interpersonal skills; and Sikhism with both better support and interpersonal skills (Vaingankar et al., 2021).

FIGURE 10.17 A bar mitzvah is an important milestone for some teens. (credit: "Bar mitzvah" by Jason Spiegelman/Flickr, CC BY 4.0)

LINK TO LEARNING

Listen to an adolescent girl's explanation of her bat mitzvah (https://openstax.org/r/104BatMitzvah) experience, including what it meant spiritually, as a milestone toward adulthood, and as part of her development in this stage of life.

Employment during adolescence is another way teens engage with their community. Is working during adolescence beneficial? Before the 1938 Fair Labor Standards Act was passed, children and adolescents routinely entered the workforce, sometimes laboring alongside (and sometimes competing with) their parents. Federal and state laws still allow adolescents to work, but they limit the start and stop times and length of the workday. According to the U.S. Bureau of Labor Statistics, 37 percent of adolescents ages sixteen to nineteen years participated in the workforce in 2024 (2024). This number includes many teens who work as part of their high school's Career, Technical, and Agricultural Education programs that provide an apprenticelike transition between schooling and adult employment.

One of the societal benefits of adolescents working is the many billions of dollars they contribute to the economy, much of it spent on items such as fast food, clothing, and entertainment. Many teens also contribute their earnings to their household's finances. The psychological benefits of teenage employment include a growing sense of pride, financial autonomy, purpose, and self-esteem. Those who work also learn about the value of money (the price of this pair of jeans means I have to work five hours), develop valuable life skills such as time management and a work ethic, and meet others, including adults, in their communities (Mortimer, 2010).

However, there are several potential downsides to teen employment. Parents and teachers worry about the reduced time and energy available for schoolwork. Another concern is having teens work alongside older individuals, which can expose them to negative influences such as underage drinking and smoking, especially in social settings outside the workplace. The balance between work and academic pursuits can also be affected, though SES plays a part as well. Some teens may work because they need to in order to contribute to the household income, contribute to expenses like car insurance, or to start saving to live independently, particularly if they are in an unstable home environment. Other adolescents may work to afford certain material goods (such as purchasing a video game they want, or their first used car, or luxury items like a special pair of sneakers or some bling). Some teens may take jobs to fund special experiences, such as an opportunity for a short study-abroad trip with their school's foreign language program. Still others work to gain valuable experience for college applications, trade programs, or other employment and career goals.

These differences in motivations and resources can dramatically change one's experience of entering the workforce and subsequent job satisfaction. Adolescents, their families, and school counselors should weigh the individual circumstances and aspirations of teens who seek employment to ensure a balanced approach that supports both their academic and personal development.

In all, whether through schools, community resources, or interest-based groups, involvement in activities and programs can help adolescents in developing self-esteem, a sense of purpose, healthy social relationships, and connection to the community, which all together can promote socioemotional well-being.

References

Aspen Institute, Project Play. (2023). State of play 2022: Our annual report on trends in youth sports. https://projectplay.org/state-of-play-2022/introduction

Baumrind, Diana. (1971). Current patterns of parental authority. *Developmental Psychology, 4*(1), 1–103. https://doi.org/10.1037/h0030372

Bi, X., Yang, Y., Li, H., Wang, M., Zhang, W., & Deater-Deckard, K. (2018). Parenting styles and parent-adolescent relationships: The mediating roles of behavioral autonomy and parental authority. *Frontiers in Psychology, 9*, 2187. https://doi.org/10.3389/fpsyg.2018.02187

Branje, S. (2018). Development of parent–adolescent relationships: Conflict interactions as a mechanism of change. *Child Development Perspectives, 12*(3), 171–176. https://doi.org/10.1111/cdep.12278

Branje, S., Laursen, B., & Collins, W. A. (2012). Parent-child communication during adolescence. In A. L. Vangelisti (Ed.), *Routledge Handbook of Family Communication* (pp. 271–286). Routledge. https://www.researchgate.net/publication/257115701_Parent-Child_Communication_during_Adolescence_2nd_Ed

Carbone, P. S., Smith, P. J., Lewis, C., & LeBlanc, C. (2021). Promoting the participation of children and adolescents with disabilities in sports, recreation, and physical activity. *Pediatrics*, 148(6), e2021054664. https://doi.org/10.1542/peds.2021-054664

Centers for Disease Control and Prevention. (2022, November 2). *Positive youth development*. U.S. Department of Health and Human Services. https://www.cdc.gov/healthyyouth/safe-supportive-environments/positive-youth-development.htm

Collins, W. A., Maccoby, E. E., Steinberg, L., Hetherington, E. M., & Bornstein, M. H. (2000). Contemporary research on parenting: The case for nature and nurture. *American Psychologist, 55*(2), 218–232. https://pubmed.ncbi.nlm.nih.gov/10717969/

Collins, W.A., & Steinberg, L. (2006). Adolescent development in interpersonal context. In N. Eisenberg, W. Damon, & R. M. Lerner (Eds.),*Handbook of child psychology: Social, emotional, and personality development* (pp. 1003–1067). John Wiley & Sons.

Dagnew, A. (2015). The relationship among parenting styles, academic self-concept, academic motivation and students' academic achievement in Fasilo Secondary School: Bahir Dar, Ethiopia. *Research in Pedagogy, 8*(2), 98–110. https://files.eric.ed.gov/fulltext/EJ1201997.pdf

De Goede, I. H. A., Branje, S. J. T., & Meeus, W. H. J. (2009). Developmental changes in adolescents' perceptions of relationships with their parents. *Journal of Youth and Adolescence, 38*(1), 75–88. https://doi.org/10.1007/s10964-008-9286-7

Diamant, J., & Sciupac, E. P. (2020). 10 key findings about the religious lives of U.S. teens and their parents. Pew Research Center. https://www.pewresearch.org/short-reads/2020/09/10/10-key-findings-about-the-religious-lives-of-u-s-teens-and-their-parents/

Elkind, D. (1998*). Reinventing childhood:* Raising and eEducating children in a changing world. Modern Learning Press. Rosemont.

Febiyanti, A., & Rachmawati, Y. (2021). Is authoritative parenting the best parenting style? *Advances in Social Science, Education and Humanities Research, 538,* 90–95). Atlantis Press.

Girl Scout Research Institute. (2019). *Today's girls, tomorrow's entrepreneurs: Transforming interest and aptitude into success*. https://www.girlscouts.org/content/dam/girlscouts-gsusa/forms-and-documents/about-girl-scouts/research/GSUSA_Todays-Girls-Tomorrows-Entrepreneurs.pdf

Kim, Y.-I., Jang, S. J., & Johnson, B. R. (2016). Tying knots with communities: Youth involvement in scouting and civic engagement in adulthood. *Nonprofit and Voluntary Sector Quarterly, 45*(6), 1113–1129. https://www.econbiz.de/Record/tying-knots-with-communities-youth-involvement-in-scouting-and-civic-engagement-in-adulthood-kim-young/10011628358

Langton, C. E., & Berger, L. M. (2011). Family structure and adolescent physical health, behavior, and emotional well-being. *Social Service Review, 85*(3), 323–357. https://doi.org/10.1086/661922

Lerner, R. M., Lerner, J. V., Bowers, E. P., & Geldhof, G. J. (2015). Positive youth development and relational-developmental-systems. In W. F. Overton, P. C. M. Molenaar, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Theory and method (7th ed.,* pp. 607–651). John Wiley & Sons. https://psycnet.apa.org/doi/10.1002/9781118963418.childpsy116

Lerner, R. M., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development a view of the issues. *The Journal of Early Adolescence, 25*(1), 10–16. https://doi.org/10.1177/0272431604273211

Lerner, R. M., Dowling, E. M., & Anderson, P. M. (2003). Positive youth development: Thriving as the basis of personhood and civil society. *Applied Developmental Science, 7*(3), 172–180. https://doi.org/10.1207/S1532480XADS0703_8

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parent-child interaction. In P. H. Mussen, & E. M. Hetherington (Eds.), *Handbook of*

child psychology: Vol. 4. Socialization, personality, and social development (pp. 1–101). New York: Wiley. https://www.scirp.org/reference/referencespapers?referenceid=1468894
MacEachern, S., Forkert, N. D., Lemay, J.-F., & Dewey, D. (2021). Physical activity participation and barriers for children and adolescents with disabilities. International *Journal of Disability, Development and Education, 69*(1), 204–216. https://doi.org/10.1080/1034912X.2021.1952939
Mastrotheodoros, S., Van der Graaff, J., Deković, M., Meeus, W. H. J., & Branje, S. (2020). Parent–adolescent conflict across adolescence: Trajectories of informant discrepancies and associations with personality types. *Journal of Youth and Adolescence, 49*(1), 119–135. https://doi.org/10.1007/s10964-019-01054-7
Modi, K., Schoenberg, J., & Tsikalas, K. (2013). Youth organizations and positive development: Lessons learned from a century of Girl Scouting. Berkman Center Research Publication No. 2013-8. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2199124
Mortimer, J. T. (2010). The benefits and risks of adolescent employment. *The Prevention Researcher, 17*(2), 8. https://pubmed.ncbi.nlm.nih.gov/20835367/
Morton, M., & Montgomery, P. (2011). Youth empowerment programs for improving self-efficacy and self-esteem of adolescents. *Campbell Systematic Reviews, 7*(1), 1–80. https://doi.org/10.4073/csr.2011.5
Parache, L. G., Vogel, M., Meigen, C., Wireland, K., & Poulain, T. (2023). Family structure, socioeconomic status, and mental health in childhood. *European Child & Adolescent Psychiatry, 33,* 2377–2386. https://doi.org/10.1007/s00787-023-02329-y
Park, H., & Lee.,K.-S. (2020). The association of family structure with health behavior, mental health, and perceived academic achievement among adolescents: A 2018 Korean nationally representative survey. *BMC Public Health, 16*(1), 510. https://doi.org/10.1186/s12889-020-08655-z
Pekel, K., Roehlkepartain, E. C., Syvertsen, A. K., & Scales, P. C. (2015). Don't forget the families: The missing piece in America's efforts to help all children succeed (Summary of key findings). Minneapolis, MN: *Search Institute*. https://pub.search-institute.org/file/SearchInstitute-DontForgetFamilies-Summary-10-13-2015.pdf
Polson, E. C., Kim, Y.-I., Jang, S. J., Johnson, B. R., & Smith, B. (2013). Being prepared and staying connected: Scouting's influence on social capital and community involvement. *Social Science Quarterly, 94*(3), 758–776. https://doi.org/10.1111/ssqu.12002
Roehlkepartain, E. C. (2015). 25 Years of Developmental Assets: Personal reflections (and a little data). *Search Institute*, 1–6. https://pub.search-institute.org/file/2015-Roehlkepartain-25-years-of-assets.pdf
Roth, J. L., Brooks-Gunn, J., Murray, L., & Foster, W. (1998). Promoting healthy adolescence: Synthesis of Youth Development Program Evaluations. *Journal of Research on Adolescence, 8*, 423–459. http://dx.doi.org/10.1207/s15327795jra0804_2
Savell, S. M., Saini, R., Ramos, M., Wilson, M. N., Lemery-Chalfant, K., & Shaw, D. S. (2023). Family processes and structure: Longitudinal influences on adolescent disruptive and internalizing behaviors. *Family Relations, 72*(1), 361–382. https://doi.org/10.1111/fare.12728
Shanahan, L., McHale, S. M., Osgood, D. W., & Crouter, A. C. (2007). Conflict frequency with mothers and fathers from middle childhood to late adolescence: Within- and between-families comparisons. *Developmental psychology, 43*(3), 539–550. https://doi.org/10.1037/0012-1649.43.3.539
Smetana, J. G., Metzger, A., Gettman, D. C., & Campione-Barr, N. (2006). Disclosure and secrecy in adolescent–parent relationships. *Child Development, 77*(1), 201–217. https://doi.org/10.1111/j.1467-8624.2006.00865.x
Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*(3), 754–770. https://doi.org/10.1111/j.1467-8624.1994.tb00781.x
United States Bureau of Labor Statistics. (2024, August). *Civilian labor force participation rate*. [Data set]. https://www.bls.gov/charts/employment-situation/civilian-labor-force-participation-rate.htm
Vaingankar, J. A., Choudhary, N., Chong, S. A., Kumar, F. D. S., Abdin, E., Shafie, S., … & Subramaniam, M. (2021). Religious affiliation in relation to positive mental health and mental disorders in a multi-ethnic Asian population. *International Journal of Environmental Research and Public Health, 18*(7), 3368. https://doi.org/10.3390/ijerph18073368
Walper, S., & Beckh, K. (2010). Adolescents' development in high-conflict and separated families: Evidence from a German longitudinal study. In A. Clarke-Stewart & J. Dunn (Eds.), *Families count: Effects on child and adolescent development* (pp. 238–270). Cambridge University Press.
Wang, J., Chase, P. A., & Burkhard, B. M. (2021). Promoting positive youth development through scouting. *Handbook of positive youth development: Advancing research, policy, and practice in global contexts,* 501–514. https://doi.org/10.1007/978-3-030-70262-5_33

Key Terms

age of consent minimum age at which an individual can legally make decisions to engage in sexual behavior
body image our mental image or representation of our body
clique close group of three to a dozen or so friends
crowd large social grouping of many dozens or more members in the social milieu of adolescents
cultural heritage adaptations to the natural and social world that have shared meaning and are passed from generation to generation
de-idealization tendency of adolescents to see a mismatch between the values their parents proclaim, the rules they put forward, and the way imperfect parents lead their own imperfect lives
friendship intimate, emotionally close relationship between two individuals
gender intensification hypothesis prediction that conforming to gender roles is of heightened relevance during adolescence
gender nonconforming behavior behavior that does not match society's expectations for the individual's assigned gender
heteronormativity idea that heterosexuality is the norm or preferred sexual orientation and that opposite-sex people are best suited for sexual and marital relationships
identity individual's complete sense of who they are, including their traits, capabilities, interests, values, and social roles
identity achievement realization and commitment to a coherent understanding of oneself and our relationship with society after exploring various identities
identity diffusion identity status in which the individual has low commitment and does not actively seek an identity; most closely aligns with Erikson's role confusion
identity foreclosure identity status in which an individual has shown an early commitment to an identity without any prior exploration
identity moratorium stage in which individuals are actively exploring various identities but not declaring an identity to be fully formed
identity versus role confusion fifth stage of Erikson's psychosocial development, which involves forming a stable and whole identity by first exploring various roles and identities
possible selves various identities toward which adolescents may work in the future
relational aggression practice of including or excluding others or otherwise threatening a sense of belonging such as by spreading gossip
rite of passage socially or culturally explicit markers to recognize the transitioning adolescent's progress and achievement of adult status in one or more dimensions
romantic relationship bond psychologically distinct from mere liking and including components of affection, intimacy, exclusivity, and interdependence
stereotype threat phenomenon where individuals experience anxiety or fear of confirming negative stereotypes about their social group, which can impair their performance in academic or other achievement-related tasks

Summary

10.1 Theories of Adolescent Socioemotional Development

- Adolescence is a time that many societies set aside in some way as children transition to adult status and roles. In some countries, teens delay transitional events such as leaving home, whereas in other nations, teens play crucial roles in supporting their families' basic needs and improving their economic situation.
- Key socioemotional developmental tasks for adolescents include figuring out who they are, developing close relationships with peers, and beginning to become independent of their parents while navigating their sociocultural surroundings.
- Teen rites of passage mark important milestones along the course of the adolescent transition and vary across cultures.

- The exploration of and commitment to an identity is a prominent psychological achievement of adolescence in which teens explore their identity, consider their past experiences, and explore societal expectations and personal aspirations to establish their values and discover who they are.

10.2 Emotional and Self-Development in Adolescence

- Adolescence is a crucial time for developing emotional intelligence (EI), an ability that includes self-awareness, self-regulation, motivation, empathy, and social skills. High EI in adolescents correlates with better academic performance, life satisfaction, and coping skills.
- Brain development during adolescence supports self-regulation, allowing teens to manage and control their behavior and emotions and to develop task persistence, delay gratification, and manage frustration.
- During adolescence, the self-concept grows to encompass abstract traits like "trustworthy" and "hardworking." Positive self-concept in teens is linked to higher self-esteem, better mental health, and more successful social relationships.
- Self-concept is the cognitive understanding of our self, while self-esteem is the motivational and emotional piece. Self-esteem is influenced by parental support, peer relationships, physical activity levels, and body image. It tends to increase across adolescence.
- All adolescents are susceptible to developing an unhealthy body image, influenced by the timing of puberty and cultural beauty standards. The development of a positive body image is a critical goal.

10.3 Identity and Culture: Race/Ethnicity, Gender, and Sexuality in Adolescence

- Our ethnicity is our cultural heritage, while race is a socially constructed concept that often includes cultural heritage.
- For many adolescents, developing a positive ethnoracial identity is vital for healthy growth and leads to higher self-esteem, better academic performance, and improved coping skills, especially in the face of discrimination.
- In Poston's model, biracial adolescents initially feel compelled to choose one ethnic identity, which may lead to guilt and reexamination of their other heritage. Ultimately, they achieve a greater appreciation and integration of multiple ethnic identities, enhancing their sense of belonging and connection. Biracial individuals often engage in code-switching, adapting their behavior and speech to fit different cultural environments.
- The gender intensification hypothesis suggests that early adolescence brings increased social pressure to adopt traditional gender roles.
- Heterosexual identity development is influenced by biology, culture, religion, gender norms, and social attitudes, which help adolescents form a clear sexual identity in which their thoughts, feelings, and behaviors align.
- A growing number of adolescents identify as sexual minorities (LGBTQ+). Developing a sexual-minority identity is a complex series of milestones rather than stages. The milestones include recognizing same-sex attraction, engaging in same-sex activities, and coming out, and their timing is influenced by factors such as race, ethnicity, and gender.

10.4 Social Contexts in Adolescence

- Peers, cliques, and crowds play a crucial role in teen social development by providing a sense of belonging and identity. They help adolescents navigate social hierarchies, form personal values, and build interpersonal relationships.
- Romantic relationships allow for exploration of psychological intimacy, sexuality, and further refinement of our attachment history. Educating teens about healthy relationship behaviors, including respect, communication, and boundaries, is crucial to prevent abusive dynamics.
- The average adolescent spends as much as one-third of their day interacting with various forms of media. Parents play a crucial role in teaching responsible technology use to make the most of its potential benefits and to keep teens safe.

- Formal schooling plays a crucial role in teen development by providing structured learning environments that foster cognitive, social, and emotional growth. Through interactions with peers and teachers, teens develop academic and communication skills, as well as a sense of identity. Moreover, formal education equips adolescents with knowledge and skills necessary for future academic and career success.

10.5 Family and Community Contexts in Adolescence

- Effective conflict management in teen-parent relationships often hinges on the parenting style. Understanding and adapting parenting practices—such as authoritative or authoritarian—to balance parental guidance and teen independence can significantly enhance the quality of teen-parent relationships during adolescence.
- The positive youth development subfield of developmental psychology aims to promote healthy psychological functioning in all children and adolescents. Participation in various youth programs and activities can provide structured environments where teens can develop leadership skills, build self-esteem, and foster a sense of community.

Review Questions

1. Carlos is thinking about a career in aviation. During the summer between his second and third years of high school, he completes an internship at an airport nearby. What identity status would you say he is working toward?
   a. foreclosure
   b. achievement
   c. diffusion/confusion
   d. moratorium

2. The theories described in the chapter see adolescence as a _____ .
   a. tumultuous but exciting time of life
   b. brief life stage
   c. life stage about which we know little
   d. time for cementing our political beliefs

3. Fourteen-year-old Samantha is confident she will be a practicing psychotherapist one day. Which of Marcia's proposed identity statuses is she in?
   a. moratorium
   b. foreclosure
   c. achievement
   d. diffusion/confusion

4. Which statement is most accurate with regard to rites of passage that are experienced during the adolescent years?
   a. They denote that a person has reached adulthood.
   b. They are found only in cultures from developed nations.
   c. There is considerable variation between different cultures.
   d. They are universal to virtually all cultures.

5. Which statement is typical for an adolescent and not a child?
   a. I am fair, responsible, and trustworthy.
   b. I like trains, sports, and any type of fruit.
   c. I like to dance, swim, and play cards.
   d. I am a good person.

6. How does the level of self-esteem typically change across the adolescent period?
   a. low at first, quick rise, and then a leveling off near the end
   b. medium level, then a dip, then a rapid rise
   c. gradual increase with age
   d. decline from middle-childhood level

7. Which best describes self-regulation in adolescents?
   a. The ability to act impulsively and follow immediate desires without considering consequences.
   b. The tendency to avoid all forms of external assistance in any situation, regardless of complexity.
   c. The capacity to rely entirely on parental guidance for behavioral control and decision-making.
   d. The skill to manage behavior and emotions to achieve better outcomes, influenced by brain developments and social factors.

8. When thirteen-year-old Taylor points out someone's body size, their parent frequently responds, "Everyone is unique and beautiful in their own way!" What is Taylor's parent acknowledging?
   a. self-love
   b. body diversity
   c. emotional intelligence
   d. somatic dimorphism

9. Fifteen-year old Tar'darius is angry at his teacher because he feels she spoke to him rudely in front of his classmates. He wants to snap back at her, but he keeps quiet. "Talk to her after class and don't make it worse," he tells himself. After class he expresses his feelings firmly but respectfully, and the teacher apologizes profusely for having embarrassed him. Tar'darius feels better and goes about the rest of his day. This adolescent has shown a high level of _____.
   a. identity foreclosure
   b. self-esteem
   c. emotional intelligence
   d. working memory regulation

10. LGBTQ+ youth who are developing their sexual identity often accomplish relevant tasks at different points in time. What approach to identity development explains this?
   a. milestone approach
   b. stage approach
   c. life course approach
   d. differentiated aspect

11. Julia is in middle school and wonders why her physical education class is segregated by sex this year, unlike in elementary school. She also wonders why her female classmates giggle at her when she sometimes spends time talking to and playing with boys in her class at recess. Which concept best explains such segregation?
   a. identity foreclosure
   b. gender conforming
   c. colorblind approach
   d. gender intensification hypothesis

12. For Black youth, entry into adolescence typically marks the beginning of the _____ phase of racial identity development, during which a negative trigger related to race is experienced.
   a. conflict
   b. encounter

c. discovery
d. rejection

13. Code-switching, or changing certain aspects of one's presentation or behavior, is often seen in people who are bi- or multi-racial. The research suggests that this approach to one's various racial identities can be _____.
a. denigrating
b. counter-productive
c. instinctive
d. exhausting

14. What has the trend been between 2015 and 2021 in adolescent media use?
a. increased screen time
b. stable amount of screen time
c. decreased screen time
d. increased print material exposure

15. Kevin texts his boyfriend at least once a day, and most of these texts are, "Do you still love me" and "Is everything okay between us." What attachment style might Kevin be exhibiting?
a. anxious-preoccupied
b. avoidant
c. disorganized
d. secure

16. What is a significant risk factor for teen dating violence?
a. high academic performance
b. supportive and communicative family relationships
c. prior experience with other forms of violence or abuse
d. active participation in school extracurricular activities

17. Suppose you noticed a table of a half-dozen or so football players in a school cafeteria. What is the term for this grouping of friends?
a. clique
b. crowd
c. focus group
d. social network

18. Which factor is correlated with absenteeism during high school?
a. student's height and weight
b. externalizing and internalizing behaviors
c. being an only child
d. involvement in extracurricular activities

19. What style of parenting is associated with the most positive outcomes for teens?
a. authoritarian style
b. authoritative style
c. uninvolved style
d. permissive style

20. What approach to understanding adolescent needs focuses on identifying their strengths?

a. milestone approach
b. developmental assets
c. stage theory
d. discontinuity model

21. Marta has always wanted to follow in her mother's footsteps and become a civil rights attorney, even though her mother never pushed this direction. She feels her mother does good for the world, and has a meaningful career. Now that she's approaching the end of high school, her interest in that occupation has dwindled, and she thinks her mother must have a rather boring and monotonous job. This is an example of the _____ of parents that sometimes happens in adolescents.
a. interpersonal strife
b. uninvolvement
c. de-idealization
d. misprioritizing

Check Your Understanding Questions

22. What are some major developmental tasks during adolescence? Provide an example of each.

23. Given the theory of identity status forwarded by Marcia (1980), what questions might you ask to determine an adolescent's current identity status?

24. What is one way authoritative parents help develop emotional intelligence in their teens?

25. How do cultural ideals and media exposure influence the development of body image among adolescents, and how do these influences differ across ethnic groups?

26. What term describes the ability to change our perspective and behavior to match the demands of our current cultural environment, and why is it particularly challenging for people of color?

27. Explain how factors such as race, ethnicity, and gender can influence the timing and pacing of achieving sexual minority identity milestones.

28. Explain one possible reason that teenagers' interest in music is greater than during childhood.

29. Identify the different attachment styles that might be seen in adolescent relationships.

30. What are the benefits and pitfalls of cliques in teen social development?

31. Identify three factors that contribute to dropping out of high school.

32. Describe at least two contexts of education or trends in academic achievement across adolescence.

33. Name the five "Cs" that comprise the core competencies upon which the positive youth development programs are built.

34. Provide two reasons for a potential increase in adolescent-parent conflict during the adolescent period.

Personal Application Questions

35. Think about a teen movie or show that you watched during your adolescence. Did the portrayal of teenage life resonate with your experiences, or did it seem exaggerated or stereotyped? Reflect on how this movie or show either accurately portrayed the challenges and realities of adolescence or contributed to a false narrative about what it means to be a teenager. Provide specific examples from the movie or show to support your reflection.

36. Think about a time during your adolescence when you faced a significant challenge or decision. How did you approach it, and what did this experience teach you about yourself?

37. Consider the role of your cultural or familial background in your adolescent development. How did your cultural or familial expectations influence your sense of identity and the choices you made during this period?

38. Adolescence is often described as a time of exploration. Looking back, what were some of the ways you explored your interests, values, or beliefs during your teenage years? How did these explorations contribute to the person you are today?

39. Reflect on a time during your adolescence when you experienced a strong emotional reaction to a situation. How did you handle your emotions at the time, and how do you think your emotional response shaped your behavior or decisions?

40. Think about your current ability to manage stress and emotions. How has your ability to self-regulate evolved since your teenage years? Provide an example of a situation where your emotional intelligence helped you navigate a challenging social or academic scenario.

41. During adolescence, how did your self-concept and self-esteem evolve? Were there specific experiences or influences, such as peer interactions, family expectations, or media exposure, that significantly impacted how you viewed yourself?

42. Reflect on your body image during adolescence. How did your physical appearance and societal standards of beauty affect your self-esteem? In hindsight, what would you tell your adolescent self about body image and self-worth?

43. Reflect on your experiences related to your ethnic or racial identity. How has your understanding of your cultural heritage evolved throughout your adolescence? What role did your community, family, or peers play in shaping your ethnic or racial identity?

44. If you identify as biracial or multiracial, think about the challenges and opportunities you have faced in developing a cohesive sense of identity. How have you navigated the process of embracing multiple cultural heritages? How has this shaped your understanding of yourself?

45. Consider your journey in understanding and expressing your gender identity. Were there specific moments or experiences during your adolescence that significantly impacted how you view your gender today? How have societal expectations or family beliefs influenced your gender identity?

46. Reflect on your sexual identity development. At what point did you become aware of your sexual orientation? How did your environment—such as your school, friends, or media—affect your exploration and understanding of your sexual identity during adolescence

47. Reflect on the role your peers have played in your social development during adolescence. How have your friendships, cliques, or crowds influenced your behavior, interests, or self-perception? Can you think of a specific time when peer pressure had a significant impact on your decisions?

48. Consider your experiences with romantic relationships during adolescence. How did these relationships affect your emotional development and sense of identity? Were there moments when you had to navigate challenges, and how did you handle them?

49. Think about the media you consume regularly during adolescence, whether it's social media, television, or other forms. How has media influenced your view of yourself and the world around you? Have you noticed any changes in your behavior or attitudes based on what you see online?

50. Reflect on a time when you felt the need to disconnect from media or social networks. What prompted this decision, and how did it affect your mental health and social interactions? Do you believe there is a healthy balance between media use and real-life connections?

51. Reflect on your own experience with family rules or guidelines during adolescence. How did your parents

or guardians set expectations for your behavior, and how did you respond to these expectations? Consider how their parenting style influenced your development.

52. Think about a time when you had a conflict with your parents or guardians during your teenage years. What was the source of the conflict, and how was it resolved? Reflect on how this conflict may have shaped your relationship with them.

53. Consider a community program or youth organization you were involved in during your adolescence. How did this experience contribute to your personal development, particularly in terms of competence, character, confidence, connections, and compassion?

54. Reflect on a positive role model or mentor from your adolescence, either within your family or community. How did this person influence your growth, decision-making, or values during this developmental stage?

Essay Questions

55. Reflect on your own journey of identity formation through the lens of James Marcia's identity statuses (identity diffusion, foreclosure, moratorium, and identity achievement). Think back to your time in high school and identify which stage you were in at that time. How did your experiences and choices during and after high school influence your movement toward or away from identity achievement? At what point in your life, if ever, did you feel you had fully achieved your identity, and what factors contributed to that sense of achievement?

56. Analyze the importance of self-regulation in adolescence. Discuss how the ability to manage emotions and behaviors influences academic performance, peer relationships, and overall well-being during this developmental stage. Reflect on a personal example from your own life where self-regulation played a significant role in either a success or a challenge. How did your ability (or inability) to regulate your emotions and behaviors impact the outcome of that situation?

57. Discuss how the development of a positive ethnic identity and sexual identity during adolescence can contribute to overall well-being. How do these aspects of identity work together to protect against the negative effects of discrimination and support a healthy transition into adulthood?

58. Discuss the role of peers in shaping social development during adolescence. How do friendships, cliques, and crowds influence an adolescent's identity, behavior, and self-esteem? Provide examples from your own experiences or observations to illustrate the positive and negative impacts that peers can have during this developmental stage.

59. Examine the influence of various forms of media on adolescent development. How does media consumption, particularly social media, impact teenagers' mental health, body image, and social interactions? Provide examples to illustrate both the positive and negative effects of media on adolescents.

60. Analyze the reasons behind the common conflicts between adolescents and their parents or caregivers. How do changes in autonomy, cognitive development, and emotional intensity contribute to these conflicts? Include an example from your own adolescence where a conflict arose with your parent(s) or caretaker(s), and reflect on how this situation was resolved (or left unresolved).

Physical and Cognitive Development in Early Adulthood (Ages 18 to 29)

11

FIGURE 11.1 Becoming an adult involves finding meaningful ways to put your skills to use. (credit: modification of work "2015 REI volunteers" by Mount Rainier National Park/Flickr, CC BY 2.0)

CHAPTER OUTLINE

11.1 Becoming an Adult
11.2 Physical Health and Growth in Early Adulthood
11.3 Sexuality in Early Adulthood
11.4 Cognitive Development in Early Adulthood
11.5 Contexts: Higher Education and Work Achievement in Early Adulthood

WHAT DOES PSYCHOLOGY SAY? Priya's college graduation day was filled with a mix of excitement and anxiety, marking the end of one journey and the beginning of another. Degree in hand, Priya was eager to start her career in marketing. However, reality hit hard as she faced a competitive job market. She sent out countless applications and went to numerous interviews, yet was unable to secure an offer. Frustrated but determined, she accepted a part-time position at a local café to make ends meet while continuing to search for a job in her field.

Amid the hustle of job hunting and working odd hours, Priya grappled with newfound responsibilities. Managing her finances and health became top priorities. To save money and avoid relying on unhealthy fast food, she learned to cook. She began dating a coworker from the café—a casual relationship at first that seemed to be turning into something more serious.

Through her job purchasing supplies for the café, Priya realized she had a passion for recycling and other environmental sustainability issues. She began volunteering with a local nonprofit environmental organization and used her marketing knowledge to publicize its fundraisers and events. Her efforts were so successful that

she caught the eye of a larger environmental group, which offered her a full-time paying position in their media relations department. She enjoyed the stable income and got a great sense of satisfaction from applying her degree to a cause she found personally meaningful.

Priya likely found herself thinking about several things related to this stage of life:

- What does it mean to be in "emerging adulthood"?
- What physical changes mark the transition and affect our functioning in early adulthood?
- What aspects of sexuality do we need to consider in early adulthood?
- How do our cognitive skills continue to develop in early adulthood, and what can we do with them?
- What are common educational and career experiences we encounter in early adulthood?

11.1 Becoming an Adult

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the major developmental tasks and expected outcomes of young adulthood
- Describe environmental factors that impact reaching physical and cognitive milestones in young adulthood

Jabril, age twenty-three, graduated college last spring with a bachelor's degree in biology and works in the pharmaceutical industry. It's not exactly his dream job, but he knows the skills he develops will open different paths for the future. He moved back in with his parents to save money while working. This wasn't his first choice either, but he knows that paying down his college debt will help him later. Besides, it allows him to reconnect with his younger sister, who is about to start high school. Jabril jogs in his neighborhood and has connected with a new temple after several years of questioning his religious beliefs. He isn't currently in a relationship, but he peruses dating apps occasionally. The possibilities for his personal and professional life are quite open.

The first phase of early adulthood is **emerging adulthood**, when individuals are in the process of becoming an adult and establishing their fully adult life, characterized by the achievement of new legal statuses such as the ability to vote, drive, drink alcohol, and marry. It's also a time of intense exploration of career options, beliefs, and relationships. Many countries around the world recognize these years as a buffer period before full adulthood, when young adults may study in college or a vocational training program, explore career options, work, or travel. Young adults also learn about the financial, personal, and social tasks of being an adult, such as making personal health decisions, living within a budget, and becoming more accountable for their choices and actions.

In this section, we'll examine theories of emerging adulthood, aspects of the physical and cognitive transitions to adulthood, common developmental tasks, and variations in the way people experience emerging adulthood across cultures.

LINK TO LEARNING

In this TED talk, clinician Meg Jay (https://openstax.org/r/104TEDJay) discusses young adulthood and what one can do to help plan for the future.

Theories of Emerging Adulthood

Becoming an adult often means making independent decisions and becoming more responsible for ourselves and others. Psychologists have developed theories that provide a framework for understanding the changes an individual undergoes during this stage of life.

Five Challenges

According to Jeffrey Arnett (2010), people face five challenges during emerging adulthood. Some of these

challenges may first arise in adolescence, but Arnett believes they are finally resolved in emerging adulthood (Arnett et al., 2014) (Figure 11.2).

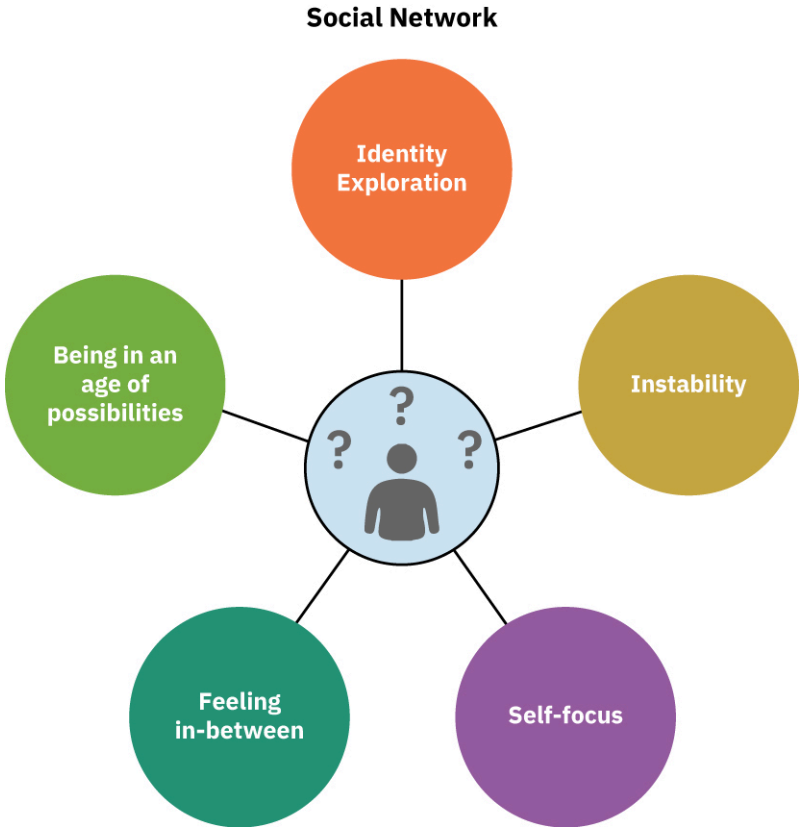


FIGURE 11.2 Arnett's theory of emerging adulthood proposes five challenges to resolve during this time in our lives. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Let's examine each of these.

- *Identity exploration*. In emerging adulthood, people think more seriously about identity exploration (begun in adolescence) (Arnett et al., 2014). They attempt to learn who they are at work and within relationships, and they solidify their core beliefs and values.
- *Instability*. Emerging adulthood is full of change, partly due to identity exploration, but also to factors such as being "last hired, first fired" at a job.
- *Self-focus*. With fewer obligations to others, emerging adults may be better able to explore not just who they are, but how to become self-sufficient.
- *Feeling in-between*. Though legally adults, emerging adults might not yet be comfortable making some decisions on their own and thus consult with family and friends when faced with important choices.
- *Being in an age of possibilities*. Emerging adults can create their own stories, perhaps leaving behind uncomfortable or unhealthy aspects of their early lives. Thus, they often report feeling optimistic about what lies ahead (Arnett et al., 2014).

LINK TO LEARNING

The time between adolescence and adulthood is relatively new ground for lifespan psychologists, and has become popularized by the work of Jeffrey Arnett. Watch Arnett's TED talk (https://openstax.org/r/104TEDArnett) in which he elaborates on work in this area and offers advice to emerging adults.

Four Identity Statuses

As adolescents enter adulthood, they are confronted with new opportunities to explore and consolidate their identity. James Marcia believed people experienced different stages in their quest for identity, based on their level of exploration and commitment (Erikson et al., 2020; Kolbert et al., 2021; Marcia, 1966). These stages are identity diffusion, identity foreclosure, identity moratorium, and identity achievement. A person can move through them in various orders or even skip some. It's also possible for different aspects of someone's identity to be in different stages at once.

What does Marcia mean by identity diffusion, foreclosure, moratorium, and achievement?

- *Identity diffusion*. The individual has not yet explored options, realized they have choices, or committed to any. They may be aware of upcoming elections, but have not chosen their preferred candidate or perhaps even decided whether to vote.
- *Identity foreclosure*. The individual has committed to some goals, values, or roles but without any exploration. They conform to the choices of their peers or their parents, such as a person entering an arranged marriage without actively considering whether the partner is a good match.
- *Identity moratorium*. The individual is actively exploring options and may be ready to commit to some values, but has not yet fully committed to their choices. A college student who changes their major several times may be experiencing identity moratorium.
- *Identity achievement*. The individual has actively explored possibilities and has now made a commitment to them, meaning they have chosen an identity. A person who has read about different faiths and chosen one to follow has attained identity achievement.

Identity achievement contributes to aspects of psychosocial well-being, including high self-esteem, conscientiousness, maturity, and problem-focused coping (Oleś, 2016). However, some of the other stages may be appropriate under certain circumstances. For example, identity diffusion may be a natural starting point for people who have little experience (Marcia, 1966; Waterman, 1982). Cultural and contextual factors may also affect the search for identity, meaning that identity achievement may not be feasible or ideal for everyone.

LINK TO LEARNING

The University of Edinburgh Reflectors' Toolkit (https://openstax.org/r/104ReflectTool) contains several resources for identifying your goals and core values and connecting them to life experiences and career prospects.

Contextual and Cultural Variations in the Experience of Emerging Adulthood

Comparing the experience of emerging adulthood across countries is not straightforward; some factors, such as culture and SES, often occur together. Increased globalization makes simple cultural distinctions (such as individualistic versus collectivistic) difficult and perhaps outdated, as some traditionally collectivistic nations adopt more individualistic attitudes (Drobot, 2021; Sugimura, 2020). Thus, some transitions associated with early adulthood may not apply to all cultures, and the experiences of people in this age range may vary significantly.

Socioeconomic Status

People seem to experience emerging adulthood regardless of SES, but differently (Arnett, 2016; Galambos & Martinez, 2007; Landberg et al., 2019; Wood et al., 2017). For example, periodic economic instability in the country or region, might mean that young adults are likely to work on short-term contracts or in positions that could be terminated at any time (Arnett et al., 2014; Landberg et al., 2019), consistent with Arnett's concept of instability. People from lower SES are more likely to have a negative outlook on life, and therefore be less likely to feel optimistic and see their life as full of possibilities. They may also lack opportunities for identity exploration due to life events such as being their family's sole wage earner (Landberg et al., 2019). Viewed in

the terms of Marcia's theory, economic conditions may limit opportunities for both exploration and commitment (Beckert et al., 2020) or cause a person to prioritize gaining financial stability over traditional markers of identity achievement that typically occur in early adulthood stages of development (Bowen et al., 2021). Some emerging adults who desire higher education may not have the ability to afford it and are therefore limited to choosing jobs based on financial needs rather than prioritizing personally fulfilling careers (Haider & von Stumm, 2022; Landberg et al., 2019; Wood et al., 2017). Still others may not find higher education to be necessary to finding a career that meets their needs and goals. Typical early adulthood experiences, such as moving out to live independently, gaining employment, forming new relationships with friends and romantic partners, and pursuing other goals such as academic or technical skill developments may be delayed or even skipped where financial restrictions or family needs are prioritized for these young adults.

Culture

In societies with an individualistic cultural orientation, identity is often based on achieving independence; cultures that are more collectivistic emphasize creating connections within family and communities as important aspects of identity (Muttaqin, 2020). However, this may be affected by globalization. Although Japan is traditionally collectivistic, the current cohort of young adults is more influenced by individualistic values and likely to prioritize independence and finding personally satisfying careers (Arnett et al., 2014; Sugimura, 2020; Sugimura et al., 2023), consistent with the theme of identity exploration and being self-focused. It's also worth noting that globalization's influence isn't identical across contexts. For example, some immigrants assimilate into the culture of their new home country, while others identify more strongly with the culture of their country of origin (Maehler et al., 2019) (Figure 11.3). Variations in acculturation may thus affect the experience of emerging adulthood for immigrants.

FIGURE 11.3 Globalization provides opportunities for people from different cultures to interact with and influence each other, such as this meeting of young adults at the 2016 Global Entrepreneurship Summit. (credit: modification of work "Global Entrepreneurship Summit 2016" by GES 2016/Flickr, Public Domain)

The opportunities a culture offers its members and subgroups may also matter. A review of literature relating to the experiences of Black individuals during emerging adulthood (Hope et al., 2015) found that experiencing discrimination interrupted their exploration of self and career. Different racial and ethnic groups within a geographic location may not have the same access to early adulthood if discrimination is present. When people have multiple cultural affiliations, identity formation may be influenced by both cultures, though not necessarily equally. For example, a study of Chinese Canadian teenagers, all of whom were children of

immigrant parents and 80 percent of whom were Chinese-born themselves, indicated that teenage girls tended to report more tension between their Canadian and Chinese identities than teenage boys. The researchers attributed these differences to the ways the Chinese and Canadian cultures regarded gender. Canadian culture tends to emphasize gender equality and independence for all, but in Chinese culture, male children are more prized and given more freedom than female children. In other words, Chinese Canadian teenage boys benefited from being part of two cultures that encouraged freedom for them, while their girl peers had to try to reconcile the conflicting messages of these cultures (Quan et al., 2022).

INTERSECTIONS AND CONTEXTS

DACA and Emerging Adulthood

The experience of emerging adulthood can depend on factors such as SES and culture. Another possible influence is immigration status. Being an immigrant, particularly with undocumented status, can limit opportunities to explore options and choose a meaningful path in life due to language barriers, financial difficulties, fear of deportation, and inability to work legally. However, public policy initiatives may be able to address some of these challenges.

The Deferred Action for Childhood Arrivals (DACA) relief program was enacted in 2012 to protect undocumented immigrants who were brought to the United States before the age of sixteen (and before 2007). President Barack Obama described it as being for "young people who study in our schools, play in our neighborhoods, are friends with our kids, and pledge allegiance to our flag" (Connor, 2023, para. 1; *Key Facts*, 2023). DACA granted a two-year work authorization to prevent young people from being deported (*Key Facts*, 2023). More than 835,000 people were protected during the decade DACA was in effect, and although the program is no longer accepting people, about 580,000 people are still in it (Connor, 2023; *Key Facts*, 2023; Wong et al., 2023) (Figure 11.4).

FIGURE 11.4 The DACA program provided many people with opportunities. (credit: "DACA-16" by Susan Ruggles/Flickr, CC BY 2.0)

The DACA program is relevant here because of its connection to the developmental tasks of emerging adulthood. Many DACA recipients have participated in emerging adulthood tasks such as attending college, starting careers, and having families, and 7 of 10 indicated that DACA allowed them to get schooling and achieve degrees they would not have been able to attain otherwise (Wong et al., 2023). Additionally, DACA recipients over twenty-five have a 91 percent employment rate, with many employed in professions considered "essential", such as health

care and education. Their employment status and income allow them to attain material markers of adulthood such as cars, homes, and health insurance (Svajlenka & Truong, 2021) as well as financially support themselves and their families.

Specific cultural practices may also affect the experience of early adulthood. For example, early marriage, particularly before age fifteen, is associated with stunted identity development for several reasons: it abruptly imposes adult roles and responsibilities on the individual, thus representing a loss of the "emerging" aspect of adulthood, limits decision-making, and imposes societal norms of gender roles onto people regardless of their individual views or goals (Abera et al., 2020; Callaghan et al., 2015). However, this gets complicated because many countries that encourage child marriage also have high rates of poverty and school dropouts (Burgess et al., 2022), so it's hard to know whether any differences are caused by economic factors, sociocultural views, or a combination.

References

Abera, M., Nega, A., Tefera, Y., & Gelagay, A. A. (2020). Early marriage and women's empowerment: The case of child-brides in Amhara National Regional State, Ethiopia. *BMC International Health and Human Rights, 20*, 1–16. https://doi.org/10.1186/s12914-020-00249-5

Arnett, J. J. (2010). Emerging adulthood(s): The cultural psychology of a new life stage. In L. A. Jensen (Ed.), *Bridging cultural and developmental approaches to psychology: New syntheses in theory, research, and policy* (pp. 255–275). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195383430.001.0001

Arnett, J. J. (2016). Does emerging adulthood theory apply across social classes? National data on a persistent question. *Emerging Adulthood, 4*(4), 227–235. https://doi.org/10.1177/2167696815613000

Arnett, J. J., Žukauskienė, R., & Sugimura, K. (2014). The new life stage of emerging adulthood at ages 18–29 years: Implications for mental health. *The Lancet Psychiatry, 1*(7), 569–576. https://doi.org/10.1016/S2215-0366(14)00080-7

Beckert, T. E., Lee, C. P., & Albiero, P. (2020). Reaching adult status among emerging adults in United States, Italy, and Taiwan. *Journal of Cross-Cultural Psychology, 51*(9), 659–682. https://doi.org/10.1177/0022022120953533

Bowen, E., Ball, A., Jones, A. S., & Miller, B. (2021). Toward many emerging adulthoods: A theory-based examination of the features of emerging adulthood for cross-systems youth. *Emerging Adulthood, 9*(3), 189–201. https://doi.org/10.1177/2167696821989123

Burgess, R. A., Jeffery, M., Odero, S. A., Rose-Clarke, K., & Devakumar, D. (2022). Overlooked and unaddressed: A narrative review of mental health consequences of child marriages. *PLOS Global Public Health, 2*(1), e0000131. https://doi.org/10.1371/journal.pgph.0000131

Callaghan, J. E., Gambo, Y., & Fellin, L. C. (2015). Hearing the silences: Adult Nigerian women's accounts of 'early marriages'. *Feminism & Psychology, 25*(4), 506–527. https://doi.org/10.1177/0959353515590691

Connor, P. (2023). *DACA 11 years later: From students to careers and families*. https://www.fwd.us/news/daca-anniversary/

Drobot, I. A. (2021). Why are cultures becoming more individualistic? In I. Boldea (Ed.), *The shades of globalisation: Identity and dialogue in an intercultural world* (pp. 52–60). https://ibn.idsi.md/sites/default/files/imag_file/GIDNI-08-Hist_2021.pdf#page=52

Eriksson, P. L., Wängqvist, M., Carlsson, J., & Frisén, A. (2020). Identity development in early adulthood. *Developmental Psychology, 56*(10), 1968–1983. https://doi.org/10.1037/dev0001093

Galambos, N. L., & Martínez, M. L. (2007). Poised for emerging adulthood in Latin America: A pleasure for the privileged. *Child Development Perspectives*, *1*(2), 109–114. https://doi.org/10.1111/j.1750-8606.2007.00024.x

Haider, Z. F., & von Stumm, S. (2022). Predicting educational and social–emotional outcomes in emerging adulthood from intelligence, personality, and socioeconomic status. *Journal of Personality and Social Psychology, 123*(6), 1386–1406. https://doi.org/10.1037/pspp0000421

Hope, E. C., Hoggard, L. S., & Thomas, A. (2015). Emerging into adulthood in the face of racial discrimination: Physiological, psychological, and sociopolitical consequences for African American youth. *Translational Issues in Psychological Science, 1*(4), 342–351. https://doi.org/10.1037/tps0000041

Key facts on Deferred Action for Childhood Arrivals (DACA). (2023). KFF. https://www.kff.org/racial-equity-and-health-policy/fact-sheet/key-facts-on-deferred-action-for-childhood-arrivals-daca/

Kolbert, J. B., Hilts, D., Crothers, L. M., & Nice, M. L. (2021). School counselors' use of Marcia's identity status theory for career advisement and consultation and collaboration. *Journal of School Counseling, 19*(21). http:/www.jsc.montana.edu/articles/v19n21.pdf

Landberg, M., Lee, B., & Noack, P. (2019). What alters the experience of emerging adulthood? How the experience of emerging adulthood differs according to socioeconomic status and critical life events. *Emerging Adulthood, 7*(3), 208–222. https://doi.org/10.1177/2167696819831793

Maehler, D. B., Weinmann, M., & Hanke, K. (2019). Acculturation and naturalization: Insights from representative and longitudinal migration studies in Germany. *Frontiers in Psychology, 10*, 430382. https://doi.org/10.3389/fpsyg.2019.01160

Marcia, J. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*(5), 551–558. https://psycnet.apa.org/fulltext/1966-07584-001.pdf

Muttaqin, D. (2020). The role of cultural orientation in adolescent identity formation: Self-construal as a mediator. *Makara Human Behavior Studies in Asia, 24*(1), 7–16. https://doi.org/10.7454/hubs.asia.1050719

Negru-Subtirica, O., Tiganasu, A., Dezutter, J., & Luyckx, K. (2017). A cultural take on the links between religiosity, identity, and meaning in life in religious emerging adults. *British Journal of Developmental Psychology, 35*(1), 106–126. https://doi.org/10.1111/bjdp.12169

Oleś, M. (2016). Dimensions of identity and subjective quality of life in adolescents. *Social Indicators Research, 126*, 1401–1419. https://doi.org/10.1007/s11205-015-0942-5

Quan, C., Costigan, C. L., & Kobayashi, K. M. (2022). Ethnic and national identity development processes: The role of cultural behaviors and gender. *Cultural Diversity and Ethnic Minority Psychology, 28*(1), 1–12. https://doi.org/10.1037/cdp0000475

Rajagopalreddy, D., & Varghese, K. (2022). Process of identity development and psychological functioning: A critical narrative review for the Indian context. *Indian Journal of Social Psychiatry 38*(3), 213–220. https://doi.org/10.4103/ijsp.ijsp_202_20

Sugimura, K. (2020). Adolescent identity development in Japan. *Child Development Perspectives, 14*(2), 71–77. https://doi.org/10.1111/cdep.12359

Sugimura, K., Hihara, S., Hatano, K., Nakama, R., Saiga, S., & Tsuzuki, M. (2023). Profiles of emotional separation and parental trust from adolescence to emerging adulthood: Age differences and associations with identity and life satisfaction. *Journal of Youth and Adolescence 52*, 475–489. https://doi.org/10.1007/s10964-022-01716-z

Svajlenka, N. P., & Truong, T. Q. (2021). *The demographic and economic impacts of DACA recipients: Fall 2021 edition*. Center for American Progress. https://www.americanprogress.org/article/the-demographic-and-economic-impacts-of-daca-recipients-fall-2021-edition/ Waterman, A. S. (1982). Identity development from adolescence to adulthood: An extension of theory and a review of research. *Developmental Psychology, 18*(3), 341–358. https://doi.org/10.1037/0012-1649.18.3.341

Wong, T. K., Kmec, I. R., Pliego, D., Ruiz, K. F., Gandhi, D., Truong, T. Q., & Svajlenka, N. P. (2023). *DACA boosts recipients' well-being and economic contributions: 2022 survey results*. Center for American Progress. https://www.americanprogress.org/article/daca-boosts-recipients-well-being-and-economic-contributions-2022-survey-results/

Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., & Kuo, A. (2017). Emerging adulthood as a critical stage in the life course. In N. Halfon, C. B. Forrest, Lerner, R. M., & E. M. Faustman (Eds.), *Handbook of life course health development* (pp. 123–143). Springer. https://library.oapen.org/bitstream/handle/20.500.12657/27798/1/1002207.pdf#page=138

11.2 Physical Health and Growth in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify major features in physical health and change across early adulthood
- Describe the markers of physical maturity that appear and are completed during early adulthood
- Identify lifestyle choices that promote healthy outcomes for early adulthood and beyond

Elisa was so excited to move into her dorm room for her first year of college. However, by the end of her first semester, she felt like life was better back at her mom's house. Though she was getting good grades, she had stopped exercising, wasn't sleeping enough, and was eating take out or fast-food for most of her meals. She just didn't have the energy she used to have before college and noticed that she often had circles under her eyes. Over the winter break, Elisa decided to make changes to her lifestyle to help her feel more energized. She realized enjoying her newfound freedom at college had led to some unhealthy lifestyle choices and that this wasn't how she wanted to live her life.

Becoming an adult means becoming more responsible for managing our eating, sleeping, and exercise habits. Learning more about what to expect during this period and how our habits affect our health can benefit our overall well-being. In this section, we'll cover changes in the body during emerging adulthood.

Physical Changes in the Body

Development and physiological changes continue over the entire lifespan. Although the physical transition from childhood to adolescence is easy to see with significant changes in height, weight, and strength, just as some examples, the transition from adolescence to early adulthood may sometimes be more subtle. Part of the reason for this is that the transition to early adulthood involves certain processes stopping. For example, height no longer increases, and our primary and secondary sexual characteristics will complete their process of developing by early adulthood (Hochberg & Konner, 2020).

In general, many of our physical capabilities are at their peak during emerging early adulthood, including muscle strength (Francis et al., 2017), lung function (Mahmoud et al., 2023), hearing (Irace et al., 2021), and immune system functioning (Brodin & Davis, 2017). Let's consider specific changes to a few of our major body systems.

- *Bones*. Bones stop growing between the ages of seventeen and twenty-five when the **epiphyses**, the ends of long bones like the ones in our arms and legs, fuse together. The collarbone is the last bone to mature, around the age of twenty-five (Hughes et al., 2020; Olivares et al., 2020). There's also an increase in bone mineral density (Hochberg & Konner, 2020; Lantz et al., 2008).
- *Joints*. The quality and amount of synovial fluid, the lubricant keeping joints healthy, starts to show some minimal decline as early as age twenty-eight, which can lead to increased stiffness (Temple-Wong et al., 2016). For individuals who have had an injury, such as athletes or from an accident, post-traumatic arthritis osteoarthritis may also occur (Punzi et al., 2016).
- *Skin*. The level of collagen, a substance that helps keep skin firm and elastic, peaks at twenty-five and slowly declines afterwards (Reilly & Lozano, 2021).
- *Body composition*. The percentages of both fat and muscle tend to increase during early adulthood, (Hochberg & Konner, 2020), although muscle mass increases more for people assigned male at birth and fat mass increases more for people assigned female at birth (Lantz et al., 2008). Body fat percentage shows a steady gradual increase starting in emerging adulthood for people assigned female at birth, but for people assigned male at birth, this figure dips around age twenty and then rises at a rate similar to that for people assigned female at birth, although overall body fat percentage tends to remain lower (Westerterp, 2018).
- *Endocrine system*. Testosterone peaks sometime between the late teens and midtwenties and then remains stable until middle age (Hochberg & Konner, 2020; Hull et al., 2011). Fasting glucose levels drop

in adolescence and the early parts of emerging adulthood, starting to rise after age twenty-five (Hammel at al., 2022); similarly, insulin resistance increases after age twenty (Zhong et al., 2019).

Though people within early adulthood are typically at their healthiest, genetic predispositions for health conditions such as heart disease and high blood pressure, when present, can start to influence health during this time. Drinking and drug use, often associated with young people exploring life for the first time on their own, can also contribute to health problems (Table 11.1).

Bodily System	Changes	Result
Bones	Ends of bones fuse Increased bone density	Strong bones
Joints	Synovial fluid declines as early as age 28	Stiff joints
Skin	Collagen declines after age 25	Skin wrinkles
Body composition	Fat and nonfat tissue increase early Nonfat tissue declines in mid-20s (for men)	Increases in body fat and muscle Decline in muscle amount and strength
Endocrine function	Testosterone peaks (for AMAB) Fasting glucose levels drop Insulin resistance increases	Height of reproductive ability Glucose tolerance declines

TABLE 11.1 Summary of Changes in Bodily Systems during Young Adulthood

Foundations for Health

The choices we make during young adulthood, especially lifestyle choices and our responses to sociocultural influences, can have both immediate and long-term influences on health. New health challenges may arise, such as increases in overweight/obesity, substance use, mental health challenges, and being a victim or perpetrator of gun violence. But there are also many opportunities for positive influences on health and establishing productive habits. While we can't control every aspect of our health, we can take steps to maintain or even enhance our physical and mental well-being.

Diet and Exercise

Healthy habits established early influence later well-being, especially cardiovascular health (Liu et al., 2012). For example, a healthy diet and a physically active lifestyle can help to protect cardiovascular health, even if a person has a genetic predisposition toward heart disease (U.S. Preventative Services Task Force, 2020). Physical activity builds and maintains muscle, bone, and joint health and improves strength (Figure 11.5). Being moderately active can also help maintain the health and functioning of the heart and lungs, counteract the negative effects of stress, and reduce blood pressure (Chen et al., 2020). In fact, many disorders can be kept in check with proper diet, exercise, and sleep.

FIGURE 11.5 Exercise has many potential benefits for our physical and mental well-being. (credit: modification of work "Participants of the Boot Camp Challenge training program perform slaloms during a session Aboard the Marine Corps recruit Depot San Diego CA Aug. 23, 2011" by Lance Cpl. Katalynn M. Thomas/Wikimedia Commons, Public Domain)

Education may also have a protective influence on health during early adulthood and beyond. Research using data from the National Longitudinal Study of Adolescent to Adult Health (AKA Add Health) suggests people with higher levels of education tend to have healthier behavioral "profiles" or habits (Skalamera & Hummer, 2016). Admittedly, these are correlational data, so we can't definitively say that getting more education causes people to have healthier habits. It could be that having more education increases income, which increases access to resources such as gyms, healthy food, and medical care. This doesn't mean that individuals in early adulthood need to restrict their diets to green smoothies and spend all of their time at the gym. Rather, they should understand that eating healthy food and being active are important, though often challenging with busy schedules.

One way to make healthy behaviors more manageable is to think of them as smaller tasks that can be done over time. For example, the American Heart Association (AHA) recommends that adults get 150 minutes (2.5 hours) of moderate intensity aerobic activity each week (American Heart Association, 2024), but that 150 minutes isn't meant to be done all at once. Also, physical activity can include things like brisk walking, gardening, and dancing, meaning that people can stay active in a variety of ways. The AHA recommendations also encourage 75 minutes of high-intensity aerobic activity (swimming laps, running, singles tennis) each week and muscle-strengthening activities such as weightlifting two days a week, but emphasize that any activity is better than none (American Heart Association, 2024).

LIFE HACKS

Stress Management

Another important factor in long-term health is stress management. Excessive stress over time eventually affects multiple aspects of our overall level of health (Seiler et al., 2020). Stress causes your brain to turn on the flight or fight response, which in turn causes the adrenal glands to release the hormones adrenaline and cortisol. Adrenaline increases the activity of our cardiovascular system, so our heart rate and blood pressure rise; if this happens repeatedly or lasts a long time, this puts strain on our heart and can lead to hypertension and stroke.

Cortisol causes our liver to release glucose (sugar), which over time can lead to Type 2 diabetes (Cleveland Clinic, 2021) and weakens our immune system (O'Connor et al., 2021). Long-term stress is also associated with increased risk of developing specific health problems such as cancer (Dai et al., 2020), respiratory infections, skin diseases like psoriasis (Graubard et al., 2021), and cardiovascular disease (O'Connor et al., 2021).

So how do we reduce stress? There's no one solution that works for everyone, but here are some things to try.

- *Relax*. This is harder than it sounds, because most of us can't just relax on command. However, we can consciously tense and release our muscles or try to control our breathing. For example, a technique called 4-7-8 breathing (where you inhale to a count of four, hold your breath for a count of seven, and exhale to a count of eight) is common in several yoga practices and has been associated with improved heart rate and blood pressure (Vierra et al., 2022). There are also relaxation apps that use breathing and mindfulness exercises to reduce stress.
- *Move*. Raising your heart rate to decrease your stress might seem counterintuitive, but exercise can reduce muscle tension and regulate our breathing as well as benefiting our cardiovascular health. Depending on exactly what we do, exercising might also help us feel a sense of accomplishment (e.g., we set a new personal record), enjoy the company of others (e.g., walking with a friend), or simply be a distraction from stressful life events (e.g., clearing your mind in a yoga class). Movement doesn't even have to mean "exercise"; dancing and pushing a lawn mower may have the same types of physical and psychological benefits.
- *Prioritize*. Stress often involves feeling overwhelmed by responsibilities, but not everything has to be done immediately. One method of prioritizing tasks is called the Eisenhower Matrix, which asks you to classify tasks along two dimensions: How urgent they are, and how important they are. Tasks that are both urgent and important, like refilling a prescription you're about to run out of, should be done immediately. Tasks that are important but not urgent, like exercising, can be put off until later (but still need to be done). Tasks that are urgent but not important, like grocery shopping, can be delegated to someone else. Finally, tasks that are neither urgent nor important, like rearranging your furniture, can be deleted or ignored.

	Urgent	Less Urgent
Important	**DO**	DECIDE
Less Important	DELEGATE	DELETE

FIGURE 11.6 The Eisenhower Matrix classifies tasks along two dimensions: urgency and importance. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

You can also use a calendar or to-do list to figure out the most important things on your plate and leave other things for later.

- *Communicate*. Talk about the things that are bothering you, either with a therapist or with someone in your life. Ask for help if you need it. No one likes asking for help, but people like helping. Remember how good you feel when you can help someone else out, and give someone else the chance to have that same feeling (plus this might give you less to do).

Healthy Sleep

Many young adults have trouble getting a good night's sleep, and stress and anxiety are among the primary reasons (Suni & Truong, 2023). Sleep matters because it lets the body repair itself at the cellular level. Physical complaints associated with poor sleep include migraines, neck pain, and a poorer sense of self-rated health (Sohn et al., 2021; Wacks & Weinstein, 2021). Poor sleep can also increase our risk of getting sick, reduce our

mental and physical health, and cause premature aging at the cellular level (Carroll & Prather, 2021).

The National Institutes of Health (NIH) recommend that adults get seven to eight hours of sleep per night. The effects of lost sleep are cumulative and produce a "sleep debt"; for example, a person who loses two hours of sleep each night for seven days has a sleep debt of fourteen hours (2022). Routinely getting less than seven hours a night can make it difficult to think clearly because chronic sleep deprivation appears to damage brain tissue in areas like the prefrontal cortex and hippocampus (Schiel et al., 2023). Cognitive complaints linked to poor sleep include impaired working memory, attention, and numerical processing (Wacks & Weinstein, 2021). Poor sleep is also a risk factor for developing depression (Fang et al., 2019) and other mental health problems such as anxiety disorders and alcohol use (Daniyal et al., 2022; Wacks & Weinstein, 2021), although it's not clear whether this is due to disrupted circadian rhythms, changes in levels of neurotransmitters like serotonin, or other factors such as coping mechanisms (Riemann et al., 2020). Regardless of the mechanism behind it, without consistently good sleep, both our physical health and mental health suffer.

Using cell phones and other electronic devices appears to be linked to health in several areas, including sleep. Research has consistently indicated an association between heavy cell phone use and declines in sleep quality and quantity, including taking longer to get to sleep, waking up more frequently (and often using the phone during these awakenings), and decreased REM sleep (Daniyal et al., 2022; Sohn et al., 2021; Wacks & Weinstein, 2021). People who report heavy cell phone use and poorer sleep also report numerous physical, cognitive, and mental health complaints identical to the ones mentioned in the previous paragraph.

Exactly why electronic device use is linked to poorer sleep is unclear. Some research suggests that the blue light emitted by electronic devices suppresses melatonin release, therefore disrupting circadian rhythms (e.g., Silvani et al., 2022); however, other research disputes this (e.g., Blume et al., 2024). It's also possible that using these devices produces emotional arousal that interferes with sleep, causes people to lose track of time and stay up later than they intended, and/or disrupts the association between bed and sleeping (Alshobaili & AlYousefi, 2019; Suni & Rosen, 2024). Regardless of the underlying mechanism, using electronic devices in bed and/or close to bedtime is reliably associated with negative effects on well-being and functioning (Daniyal et al., 2022; Silvani et al., 2022; Sohn et al., 2021; Wacks & Weinstein, 2021). Interestingly, the overall duration of phone use may be less important than how close to bedtime someone uses their phone (Sohn et al., 2021).

Contextual and Cultural Influences on Health

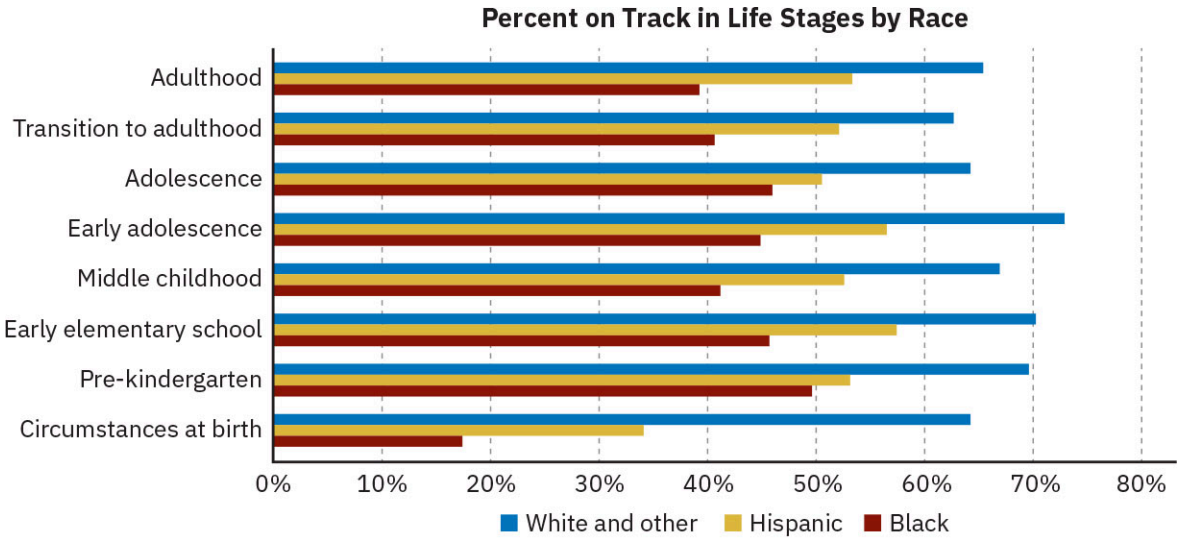
Research has found that having low socioeconomic status early in life can influence well-being and health over the person's lifetime (Trent et al., 2019; Wickrama et al., 2022; Yang et al., 2017). Being in the lowest 25 percent SES was found to be particularly disadvantageous to long-term health (Yang et al., 2017). In addition to lacking resources to become and stay healthy, people with lower SES encounter are at a higher risk of adverse life events, such as job loss. Having a more limited set of socioeconomic resources is also associated with higher stress and higher instability (Landberg et al., 2019). For those who struggle with chronic poverty this stress can be reflected in health (Beech et al., 2021). Intergenerational transmission of social and economic disadvantages can increase these health and well-being risks for early adults and reduce access to protective factors such as educational opportunities (Vauhkonen et al., 2017; Wagmiller & Adelman, 2009). Government policies and programs, such as tax care credits for low income families, welfare programs, and educational assistance resources can provide opportunities for overcoming these early disadvantages (Van Ryzin et al., 2018; Vauhkonen et al., 2017).

Racial Discrimination

Racial discrimination is associated with decreased feelings of well-being and health, including increased anxiety and depression (Beech et al., 2021). Research (Lei et al., 2021) following over 1,800 people between the ages of eighteen and twenty-eight for a decade revealed that the more frequently young people experience discrimination, the higher their risk of developing mental health issues or a problem with **substance misuse (or substance abuse)**, the use of drugs or alcohol in excess or for purposes for which they weren't intended,

leading to problems in physical, social, and/or psychological functioning, often termed substance misuse or problematic substance use in order to avoid stigma of "abuse"; often related to substance use disorder (SUD). The research from Lei et al. (2021) also points to a possible cumulative effect. Black individuals often deal with extra stressors during early adulthood, including discrimination in employment and housing, and in interactions with others at work or school (Beech et al., 2021). The stress caused by discrimination appears to negatively affect people' social, mental, and physical health (Hope et al., 2015).

The health effects of being a person of color may start early. A 2021 study by the Urban Institute measured the numbers of different groups considered "on track" for healthy developmental outcomes, with "on track" referring to having a variety of potentially beneficial characteristics and life circumstances such as being born into a two-parent family, having good interpersonal and self-control skills, and having an income at least 100 percent above the federal poverty level. While approximately 67 percent of White individuals are born on track for a healthy developmental outcome according to the criteria presented, only 17 percent of Black children and 34 percent of Hispanic children are. By the time people reach thirty years of age, 66 percent of White adults are still on track, while less than 40 percent of Black individuals and 54 percent of Hispanic individuals are (Acs et al., 2021) (Figure 11.7). For Black and Hispanic people in the United States, their chances of attaining successful development generally improve between birth and adulthood, but are consistently lower than the chances of their White peers.



Source: Social Genome Model.

FIGURE 11.7 The percentage of the population considered "on track" for healthy development—due to having potentially beneficial characteristics and life circumstances such as income and good socioemotional skills—shows variations by race. (credit: modification of work "Percent on Track in Life Stage by Race" by Social Genome Project/ Urban Institute, CC BY 2.0)

Gender and Sexuality

For various reasons, women generally live longer than men but are at higher risk of violence, poverty, and physical and mental health problems (e.g., Kettel et al., 2017). A French study of men's and women's use of preventive care screenings indicated that women under age fifty received the fewest screenings, particularly for cardiovascular health and suggested that differences in perception of cardiovascular health risk may be partly responsible (Gaye et al., 2022). Other studies have noted that women are more likely than men to live in poverty and be single parents, which are potentially stressful situations (Bassett & Moore, 2013; Christie-Mizell, 2022; Kettel, 2017; Williams & Baker, 2021). In many cases, the intersection of gender with race and SES appears to increase the likelihood of negative outcomes such as depression and health problems (Christie-Mizell, 2022; Williams & Baker, 2021). These studies also noted that the sociocultural norms and gender role

expectations for women produce a lot of stress in that women are expected to be self-sacrificing, nurturing, and subservient (Bassett & Moore, 2013; Christie-Mizell, 2022; Kettel, 2017).

FIGURE 11.8 LGBTQ+ adults may experience discrimination, violence, and even criminal persecution, which can negatively affect their well-being. (credit: modification of work "Dia de los Muertos Festival Canoga Park CA" by Mark Krynsky/Flickr, CC BY 2.0)

The mental and physical health of LGBTQ+ young adults has become the focus of more research in the past decade. In many countries, being LBGTQ+ meets a range of responses, from passive to active social disapproval, to violence, and even criminal persecution. This can produce an environment of chronic stress that negatively affects health. Compared to heterosexual peers, LGBTQ+ emerging adults are more likely to experience homelessness and food insecurity, often starting in adolescence after their home life becomes intolerable (Bowen et al., 2021; Oi, 2023; Tucker et al., 2024). These circumstances were associated with higher rates of depression, anxiety, physical ailments, and drug use (Tucker et al., 2024). Evidence indicates that LGBTQ+ men were likely to experience negative economic consequences starting as they entered their thirties (Oi, 2023), suggesting that their risk of developing health problems due to chronic stress or lack of access to health care would likely increase as they reached middle age (Figure 11.8).

Specific Individual Health Concerns in Early Adulthood

Obesity, drug and alcohol use, and injuries and accidental death are specific health concerns for young adults. You may have heard that weight gain is common during the first year of college. College freshmen often do gain weight, but not that much—typically about 4 kg (8.8 lb) for male students and about 1.8 kb (4 lb) for female students (Beaudry et al., 2019; Winpenny et al., 2020). This may occur because of new and less healthy eating habits than at home, changes in sleep patterns, and reduced activity levels. Thus, stress may affect our health not just through direct changes in the body but also by changing our health-related behaviors.

Obesity (partly indicated by having a body mass index, or BMI, over 30) occurring during adolescence often carries into early and later stages of adulthood (Ng & Cunningham, 2020; Simmonds et al., 2016). BMI, a measure of height and mass, has been used for years to assess future health problems, but it has come under increasing criticism because it merely focuses on height and weight and doesn't examine body composition. A person with a lot of muscle mass may have the same BMI as a person with a lot of fat tissue, but we probably wouldn't consider them to be equally healthy. Nor does obesity guarantee health problems. People with a high BMI have a higher risk of developing heart disease than people with a lower BMI; however, once they develop heart disease, people with a high BMI sometimes live longer and in better health than people with a lower BMI who develop heart disease. This is called the **obesity paradox** (Horwich et al., 2001) and has been consistently, though not universally, demonstrated (e.g., Carbone et al., 2020; Donataccio et al., 2021; Fröhlich et al., 2022). Additionally, it's possible to have a BMI that's too low, as in anorexia nervosa or malnutrition. Being thin

doesn't equal being healthy. Some research has indicated that other measures than BMI alone might better indicate obesity related health risks, such as waist circumference, waist-to-hip ratio. and waist-to-height ratio (Harvard T.H. Chan, 2022; Tu, 2022). The American Medical Association has also adopted the policy to use metrics beyond BMI due to the ways BMI can be an inaccurate and misleading measure of body fat, particularly across racial and ethnic groups (AMA, 2023; Tu, 2022).

Social, environmental, and genetic factors all play a role in increasing the risk of becoming obese. Low socioeconomic status has been connected to obesity, but the connection is not yet well understood. It is believed that stress and limited access to high-quality food may play a role (Spinosa et al., 2019). Additionally, a recent systematic review found emerging adulthood as a risk period for both poor mental health and low diet quality. Findings noted a moderate association between diet quality and measures of psychological health such as depression and anxiety (Collins et al., 2022). The young adults studied in this review weren't exclusively college students, suggesting that it's the experience of young adulthood, and not just the college environment, that's most influential here.

Drug and alcohol use also affect health. Though many adolescents experiment with drugs and alcohol, emerging adulthood is the time when substance use is most likely to occur and to set the foundation for possible substance misuse in the future (UNODC, 2018). Emerging adults (eighteen to twenty-five) are the largest abusers of marijuana, alcohol, anti-anxiety medications, and ADHD medication (de Jonge et al., 2022; National Center for Drug Abuse Statistics, 2023; Schepis et al., 2020). Drugs and alcohol are frequent elements of socialization at bars, parties, clubs, and concerts during emerging adulthood (de Jonge et al., 2022; Martinotti et al., 2020; Strandberg et al., 2020). In fact, certain drugs such as ketamine and MDMA/Ecstasy are known as "club drugs" because of their association with the nightclub scene (Strandberg et al., 2020). Other potential reasons for the increase in substance use during emerging adulthood include curiosity, financial challenges, and ineffective coping mechanisms for dealing with stress caused by increased responsibilities and changing relationships with family and peers (Ibarra-Mejia et al., 2023; Schepis et al., 2020; Zaami et al., 2020). College students (and young adults in general) are more likely to report using alcohol or drugs to cope with stress than getting counseling (Ibarra-Mejia et al., 2023) (Figure 11.9).

FIGURE 11.9 Being able to legally drink alcohol brings new experiences and challenges. (credit: "Everyone take a drink" by Dani Lurie/Wikimedia Commons, CC BY 2.0)

This trend of drug and alcohol use increasing in emerging adulthood isn't confined to any specific country or area of the world, but is a global observation (UNODC, 2018). Additionally, it appears to affect emerging adults regardless of educational status. Emerging adults in the workforce appear to also have higher rates of drug and alcohol use than their older coworkers, suggesting that having disposable income is one factor contributing to this behavior (de Jonge et al., 2022; Strandberg et al., 2020). Table 11.2 shows the percentage of adults ages

eighteen to twenty-two in the United States using alcohol and other drugs, broken down by gender and college enrollment status. In general, rates of substance use are roughly equivalent across groups, with the exception of heavy drinking being more prevalent in male college students compared to the other groups.

	College Male	College Female	Noncollege Male	Noncollege Female
Marijuana	22.6	19.9	24.8	22.4
Heavy drinking	9.7	6.8	6.9	5.7
Prescription drugs	3.4	3.1	3.1	3.7
Hallucinogens	1.8	1.0	2.6	1.6
Cocaine/crack	1.2	1.4	1.2	1.8
Methamphetamine	0.2	0.0	0.4	0.2

TABLE 11.2 Percentage of Adults Ages 18–22 Reporting Using Specific Substances within the Last Month (source: SAMHSA, 2019)

Substance use is correlated with increased risks of mental health difficulties, risky sexual behavior, violent assault, and injuries and death from accidents and motor vehicle crashes (Baskin-Sommers & Sommers, 2006; de Jonge et al., 2022; Martinotti et al., 2020; National Center for Drug Abuse Statistics, 2023). Repeated use of marijuana and other cannabis-containing substances is associated with increased risk of developing schizophrenia spectrum disorders, particularly in male users (Hjorthøj et al., 2023; Martinotti et al., 2020). Approximately 20 percent of HIV cases can be linked to sharing needles for injected drugs (National Center for Drug Abuse Statistics, 2023). Some substance abuse problems start out as recreational use but snowball into addictions; 8.1 percent of adults ages eighteen to twenty-two reported a diagnosis of alcohol use disorder and 13.1 percent reported a diagnosis of substance use disorder (SAMHSA, 2019). It's unclear why some people develop these disorders and others don't, but there doesn't seem to be a single pathway or risk factor that guarantees this. There instead appear to be many risk factors, including biological (e.g., variations in dopamine function that affect pleasure-seeking behavior), environmental (e.g., adverse childhood events), psychological (e.g., tendency toward risk-taking) and social (e.g., desire to conform (Potenza, 2013). Regardless of the cause, alcohol or substance use disorders can affect a person's ability to succeed academically, professionally, and socially, and thus interfere with achieving the typical milestones of emerging adulthood (Table 11.3).

	Stimulants	Sedative-Hypnotics ("Depressants")	Opiates	Hallucinogens
Examples	Cocaine, amphetamines (including some ADHD medications such as Adderall), methamphetamines, MDMA ("Ecstasy" or "Molly")	Alcohol, barbiturates (e.g., secobarbital, pentobarbital), Benzodiazepines (e.g., Xanax)	Opium, Heroin, Fentanyl, Morphine, Oxycodone, Vicodin, methadone, and other prescription pain relievers	Marijuana, LSD, Peyote, mescaline, DMT, dissociative anesthetics including ketamine and PCP
Effects on the body	Increased heart rate, blood pressure, body temperature	Decreased heart rate, blood pressure	Decreased pain, pupil constriction, decreased gut motility, decreased respiratory function	Increased heart rate and blood pressure that may dissipate over time
Psychologically addicting?	Yes	Yes	Yes	Yes

TABLE 11.3 Classes of Drugs and Their Effects

Injuries and Accidental Death

Despite the good physical health typical of young adulthood, people in this developmental stage are at increased risk of accidental death from causes such as car accidents, overdose, and drowning. Other risks include suicide and homicide, especially via gun violence.

The leading causes of death for young adults, according to the CDC (2020), are listed in Figure 11.10.

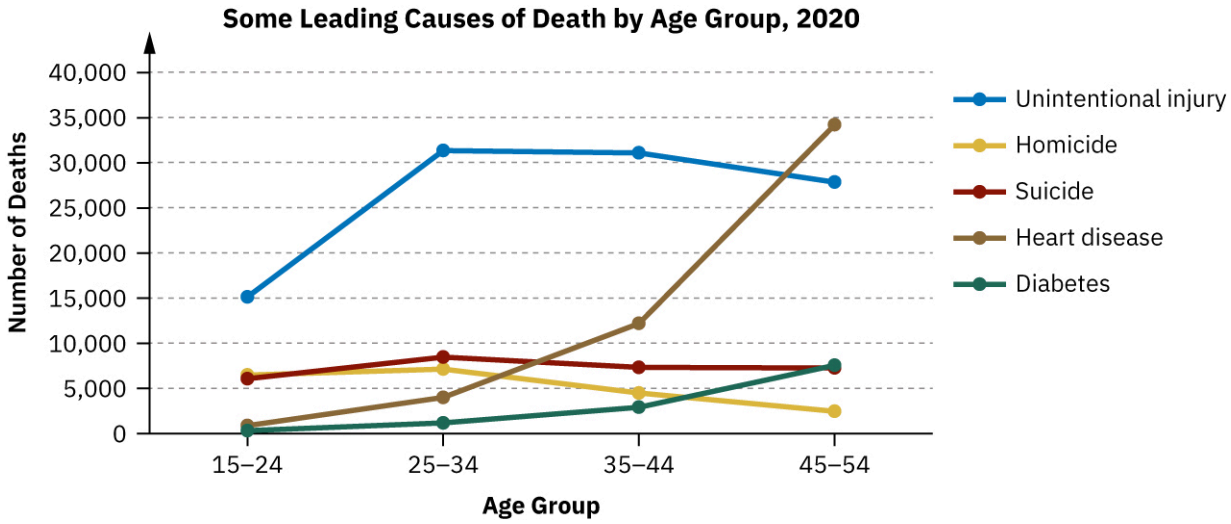


FIGURE 11.10 Causes of death aren't equally distributed across the lifespan; some causes are more likely for some age groups than others. (data source: Centers for Disease Control; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Unintentional injury is the most common cause of death during emerging adulthood, and most of those injuries (44.6 percent) are caused by car accidents. Many emerging adults find themselves driving more often—to work, school, stores, and so on—and increased mileage can mean more opportunities for accidents to occur. Being exposed to gun violence at a young age is strongly related to being caught in an event that

included gun violence later (Beardslee et al., 2021a, 2021b; Semenza et al., 2024). It's possible that growing up in an environment where guns and violence are common normalizes these things (Beardslee et al., 2021a).

Mental Health in Emerging and Early Adulthood

Mental health is an important part of overall well-being (Figure 11.11). Emerging adulthood can be full of positive experiences alongside major life changes, but almost everyone has some negative experiences as well. Sometimes, potentially unrelated to life experiences, people develop mental health problems such as depression, anxiety, and substance use disorders. Emerging adulthood is often a pivotal time for mental health. A 2022 meta-analysis indicated that worldwide, 48.4 percent of cases of mental illness had an onset before age eighteen, and 62.5 percent had an onset before age twenty-five, indicating that the prevalence of mental illness increased by 14.1 percent between the ages of eighteen and twenty-five. Eating disorders and obsessive-compulsive disorder, were most likely to be diagnosed between the ages of seventeen to twenty-two, and schizophrenia, alcohol use disorder, panic disorder, and personality disorders were most likely to be first diagnosed between the ages of twenty-five to twenty-seven (Solmi et al., 2022). Therefore, the early adulthood stage of development may result in first diagnoses of symptoms from mental, physical, and social struggles that may have occurred earlier in life, and are first identified and properly diagnosed as a young adult.

FIGURE 11.11 Mental health issues can affect many aspects of our well-being. (credit: modification of work "Man sitting on ground" by NappyStock/nappy, Public Domain)

In addition to young adulthood already being a prime time for developing mental health problems, the COVID-19 pandemic added increased stress to people's lives due to lockdowns, loss of loved ones, worries about health, and disruption of typical activities. During the first two years of the pandemic, depression, anxiety, and loneliness increased for the world's population in general but for younger people in particular (Birmingham et al., 2023; Horigan et al., 2021; Juvonen et al., 2022; Molock & Parchem, 2022; Wang et al., 2020; World Health Organization, 2021). Interestingly, longitudinal research suggests that loneliness declined after the first two years because adolescents and young adults adapted to using technology for most of their social interactions (Juvonen et al., 2022), an extension of previously noted trends toward increasing use of social networks for peer interaction and communication (Lima et al., 2017).

There is no one leading risk factor for suicide. Many factors appear to play a role in suicides, occurring in four broad categories: individual risk factors, relationship risk factors, community risk factors, and societal risk factors (CDC, 2023)(Figure 11.12). Specific examples of risk factors include racism and bullying, financial difficulties, lack of opportunities (for work or housing), lack of access to health care and mental health care, feelings of being left out, and relationship problems (CDC, 2021; 2023). Some individuals are at higher risk of

attempting or dying by suicide, including veterans, American Indian and Alaskan natives, people living in rural areas, men, and sexual/gender minorities (CDC, 2023a).

Risk Factors for Suicide by Category

Individual	Relationship	Community	Societal
• Prior suicide attempts • History of mental illness • Chronic illness • Legal issues • Financial loss • Substance abuse • Victim of violence	• Bullying • Volatile relationships • Family history of suicide • Loss of relationship(s) • Social isolation	• Decreased access to healthcare • Suicide cluster occuring in the community • Community violence • Discrimination	• Stigmas with seeking mental health help • Access to instruments utilized to commit suicide • Unsafe media portrayals of suicide

FIGURE 11.12 There are several categories of risk factors for suicide, and people may have more than one risk factor from more than one category. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Worldwide, 21 percent of gun deaths are from suicide, but this percentage varies among countries. In the United States, suicide accounts for almost two-thirds of gun-related deaths (World Population Review, 2024). While easy access to guns may contribute to this, another possibility is that repeated exposure to violence produces a sense of hopelessness. There are two research findings consistent with this notion. First, in 2022, Black young adults had more gun-related suicides than White young adults for the first time since data started being collected (Semenza et al., 2024). Second, gun carrying has been found to be negatively correlated with **future orientation**, the ability to think about and plan for what lies ahead, including predicting consequences of one's actions. People who are low on future orientation may not have high expectations for themselves and/or consider or care about the consequences of their actions, and thus engage in more dangerous behavior or be more likely to die by suicide (Beardslee et al., 2021a).

LINK TO LEARNING

If you or someone you know is at risk of suicide, reach out to the National 988 Suicide and Crisis Lifeline (https://openstax.org/r/104988Lifeline) for help. Text or call 988 or chat through their website to receive immediate, confidential support.

References

Acs, G., Werner, K., Blagg, K., & Martin, S. (2021). *Identifying pathways for upward mobility*. Urban Institute. https://www.urban.org/sites/default/files/publication/103547/identifying-pathways-for-upward-mobility.pdf

Alshobaili, F. A., & AlYousefi, N. A. (2019). The effect of smartphone usage at bedtime on sleep quality among Saudi non- medical staff at King Saud University Medical City. *Journal of Family Medicine and Primary Care, 8*(6), 1953–1957. https://doi.org/10.4103/jfmpc.jfmpc_269_19

American Heart Association. (2024). *American Heart Association recommendations for physical activity in adults and kids*. https://www.heart.org/en/healthy-living/fitness/fitness-basics/aha-recs-for-physical-activity-in-adults

Baskin-Sommers, A., & Sommers, I. (2006). The co-occurrence of substance use and high-risk behaviors. *Journal of Adolescent Health, 38*(5), 609–611. https://doi.org/10.1016/j.jadohealth.2005.07.010

Bassett, E., & Moore, S. (2013). Gender differences in the social pathways linking neighborhood disadvantage to depressive symptoms in adults. *PloS One, 8*(10), e76554. https://doi.org/10.1371/journal.pone.0076554

Beardslee, J., Docherty, M., Mulvey, E., & Pardini, D. (2021a). The direct and indirect associations between childhood socioeconomic disadvantage and adolescent gun violence. *Journal of Clinical Child and Adolescent Psychology, 50*(3), 326–336. https://doi.org/10.1080/15374416.2019.1644646

Beardslee, J., Kan, E., Simmons, C., Pardini, D., Peniche, M., Frick, P. J., Steinberg, L., & Cauffman, E. (2021b). A within-individual examination of the predictors of gun carrying during adolescence and young adulthood among young men. *Journal of Youth and Adolescence, 50*(10), 1952–1969. https://doi.org/10.1007/s10964-021-01464-6

Beech, B. M., Ford, C., Thorpe Jr, R. J., Bruce, M. A., & Norris, K. C. (2021). Poverty, racism, and the public health crisis in America. *Frontiers in Public Health, 9*, 699049. https://doi.org/10.3389/fpubh.2021.699049

Birmingham, W. C., Wadsworth, L., Lassetter, J. H., Graff, T. C., Lauren, E., & Hung, M. (2023). COVID-19 lockdown: Impact on college students' lives. *Journal of American College Health, 71*(3), 879–893. https://doi.org/10.1080/07448481.2021.1909041

Blume, C., Cajochen, C., Schöllhorn, I., Slawik, H. C., & Spitschan, M. (2024). Effects of calibrated blue-yellow changes in light on the human circadian clock. *Nature Human Behaviour, 8*(3), 590–605. https://doi.org/10.1038/s41562-023-01791-7

Bowen, E., Ball, A., Jones, A. S., & Miller, B. (2021). Toward many emerging adulthoods: A theory-based examination of the features of emerging adulthood for cross-systems youth. *Emerging Adulthood, 9*(3), 189–201. https://doi.org/10.1177/2167696821989123

Brodin, P., & Davis, M. M. (2017). Human immune system variation. *Nature Reviews Immunology, 17*(1), 21–29. https://doi.org/10.1038/nri.2016.125

Carbone, S., Lavie, C. J., Elagizi, A., Arena, R., & Ventura, H. O. (2020). The impact of obesity in heart failure. *Heart Failure Clinics, 16*(1), 71–80. https://doi.org/10.1016/

j.hfc.2019.08.008
Carroll, J. E., & Prather, A. A. (2021). Sleep and biological aging: A short review. *Current Opinion in Endocrine and Metabolic Research, 18*, 159–164. https://doi.org/10.1016/j.coemr.2021.03.021
Centers for Disease Control and Prevention. (2022a). *Distracted driving*. U.S. Department of Health and Human Services. https://www.cdc.gov/transportationsafety/distracted_driving/index.html#problem
Centers for Disease Control and Prevention. (2022b). *Impaired driving: Get the facts*. U.S. Department of Health and Human Services. https://www.cdc.gov/transportationsafety/impaired_driving/impaired-drv_factsheet.html
Centers for Disease Control and Prevention. (2022c). *Risk and protective factors*. U.S. Department of Health and Human Services. https://www.cdc.gov/suicide/factors/index.html
Centers for Disease Control and Prevention. (2023a). *Disparities in suicide*. U.S. Department of Health and Human Services. https://www.cdc.gov/suicide/facts/disparities-in-suicide.html
Centers for Disease Control and Prevention. (2023b). *Preventing youth violence*. U.S. Department of Health and Human Services. https://www.cdc.gov/violenceprevention/youthviolence/fastfact.html
Centers for Disease Control and Prevention. (2020). *Injury Data Visualization Tools | WISQARS | CDC*. U.S. Department of Health and Human Services. https://wisqars.cdc.gov/data/lcd/home
Centers for Disease Control and Prevention. (2023b). *Suicide data and statistics*. U.S. Department of Health and Human Services. https://www.cdc.gov/suicide/suicide-data-statistics.html
Chen, M. L., Hu, J., McCoy, T. P., Letvak, S., & Ivanov, L. (2020). Associations of lifestyle intervention effect with blood pressure and physical activity among community-dwelling older Americans with hypertension in Southern California. *International Journal of Environmental Research and Public Health, 17*(16), 5673. https://doi.org/10.3390/ijerph17165673
Christie-Mizell, C. A. (2022). Neighborhood disadvantage and poor health: The consequences of race, gender, and age among young adults. *International Journal of Environmental Research and Public Health, 19*, 8107. https:// doi.org/10.3390/ijerph19138107
Cleveland Clinic. (2021). *Cortisol*. https://my.clevelandclinic.org/health/articles/22187-cortisol
Collins, S., Dash, S., Allender, S., Jacka, F., & Hoare, E. (2022). Diet and mental health during emerging adulthood: A systematic review. *Emerging Adulthood, 10*(3), 645–659. https://doi.org/10.1177/2167696820943028
Dai, S., Mo, Y., Wang, Y., Xiang, B., Liao, Q., Zhou, M., Li, X., Li, Y., Xiong, W., Li, G., Guo, C., & Zeng, Z. (2020). Chronic stress promotes cancer development. *Frontiers in Oncology, 10*, 1492. https://doi.org/10.3389/fonc.2020.01492
de Jonge, M. C., Bukman, A. J., van Leeuwen, L., Onrust, S. A., & Kleinjan, M. (2022). Latent classes of substance use in young adults - A systematic review. *Substance Use & Misuse, 57*(5), 769–785. https://doi.org/10.1080/10826084.2022.2040029
Donataccio, M. P., Angiola, V., & Ottavio, B. (2021). Obesity paradox and heart failure. *Eating and Weight Disorders, 26*(6), 1697–1707. https://doi.org/10.1007/s40519-020-00982-9
Fang, H., Tu, S., Sheng, J., & Shao, A. (2019). Depression in sleep disturbance: A review on a bidirectional relationship, mechanisms and treatment. *Journal of Cellular and Molecular Medicine, 23*(4), 2324–2332. https://doi.org/10.1111/jcmm.14170
Francis, P., Lyons, M., Piasecki, M., Mc Phee, J., Hind, K., & Jakeman, P. (2017). Measurement of muscle health in aging. *Biogerontology, 18*(6), 901–911. https://doi.org/10.1007/s10522-017-9697-5
Fröhlich, H., Frey, N., Frankenstein, L., & Täger, T. (2022). The obesity paradox in heart failure: Is it still valid in light of new therapies? *Cardiology, 147*(5–6), 529–538. https://doi.org/10.1159/000527332
Gaye, B., Hergault, H., Lassale, C., Ladouceur, M., Valentin, E., Vignac, M., Danchin, N., Diaw, M., Kvaskoff, M., Chamieh, S., Thomas, F., Michos, E., & Jouven, X. (2022). Gender gap in annual preventive care services in France. *eClinical Medicine, 49*, 101469. https://doi.org/10.1016/j.eclinm.2022.101469
Graubard, R., Perez-Sanchez, A., & Katta, R. (2021). Stress and skin: An overview of mind body therapies as a treatment strategy in dermatology. *Dermatology Practical & Conceptual, 11*(4), e2021091. https://doi.org/10.5826/dpc.1104a91
Hammel, M. C., Stein, R., Kratzsch, J., Vogel, M., Eckert, A. J., Triatin, R. D., Colombo, M., Meigen, C., Baber, R., Stanik, J., Spielau, U., Stoltze, A., Wirkner, K., Tönjes, A., Snieder, H., Holl, R. W., Stumvoll, M., Blüher, M., Kiess, W., & Körner, A. (2023). Fasting indices of glucose-insulin-metabolism across life span and prediction of glycemic deterioration in children with obesity from new diagnostic cut-offs. *The Lancet Regional Health Europe, 30*, 100652. https://doi.org/10.1016/j.lanepe.2023.100652
Hjorthøj, C., Compton, W., Starzer, M., Nordholm, D., Einstein, E., Erlangsen, A., Nordentoft, M., Volkow, N. D., & Han, B. (2023). Association between cannabis use disorder and schizophrenia stronger in young males than in females. *Psychological Medicine, 53*(15), 7322–7328. https://doi.org/10.1017/S0033291723000880
Hochberg, Z., & Konner, M. (2020). Emerging adulthood, a pre-adult life- history stage. *Frontiers in Endocrinology, 10*(918). https://doi.org/10.3389/fendo.2019.00918
Hope, E. C., Hoggard, L. S., & Thomas, A. (2015). Emerging into adulthood in the face of racial discrimination: Physiological, psychological, and sociopolitical consequences for African American youth. *Translational Issues in Psychological Science, 1*(4), 342–351. https://doi.org/10.1037/tps0000041
Horwich, T. B., Fonarow, G. C., Hamilton, M. A., MacLellan, W. R., Woo, M. A., & Tillisch, J. H. (2001). The relationship between obesity and mortality in patients with heart failure. *Journal of the American College of Cardiology, 38*(3), 789–95. https://doi.org/10.1016/s0735-1097(01)01448-6.
Hughes, J. L., Newton, P. O., Bastrom, T., Fabricant, P. D., & Pennock, A. T. (2020). The clavicle continues to grow during adolescence and early adulthood. *HSS Journal, 16*(S2), 372–377. https://doi.org/10.1007/s11420-020-09754-8
Hull, H. R., Thornton, J., Wang, J., Pierson, R. N., Jr, Kaleem, Z., Pi-Sunyer, X., Heymsfield, S., Albu, J., Fernandez, J. R., Vanitallie, T. B., & Gallagher, D. (2011). Fat-free mass index: Changes and race/ethnic differences in adulthood. *International Journal of Obesity, 35*(1), 121–127. https://doi.org/10.1038/ijo.2010.111
Ibarra-Mejia, G., Lusk, M., & Umucu, E. (2023). Mental health among college students during the COVID-19 pandemic at a Hispanic-serving institution. *Health Promotion Practice, 24*(3), 455–464. https://doi.org/10.1177/15248399221092750
Irace, A. L., Chern, A., & Golub, J. S. (2021). Hearing loss patterns throughout life: Insights from Japan. *The Lancet Regional Health–Western Pacific, 10*. 100152. https://doi.org/10.1016/j.lanwpc.2021.100152
Juvonen, J., Lessard, L. M., Kline, N. G., & Graham, S. (2022). Young adult adaptability to the social challenges of the COVID-19 pandemic: The protective role of friendships. *Journal of Youth and Adolescence, 51*(3), 585–597. https://link.springer.com/content/pdf/10.1007/s10964-022-01573-w.pdf
Kettel, B. (2017). Women, health, and the environment. In S. Sherwin & B. Parish (Eds.), *Women, medicine, ethics and the law* (1st ed., pp. 23–35). Routledge. https://doi.org/10.4324/9781003073789
Landberg, M., Lee, B., & Noack, P. (2019). What alters the experience of emerging adulthood? How the experience of emerging adulthood differs according to socioeconomic status and critical life events. *Emerging Adulthood, 7*(3), 208–222. https://doi.org/10.1177/2167696819831793
Lantz, H., Bratteby, L. E., Fors, H., Sandhagen, B., Sjöström, L., & Samuelson, G. (2008). Body composition in a cohort of Swedish adolescents aged 15, 17 and 20.5 years. *Acta Paediatrica, 97*(12), 1691–1697. https://doi.org/10.1111/j.1651–2227.2008.01035.x
Lei, Y., Shah, V., Biely, C., Jackson, N., Dudovitz, R., Barnert, E., Hotez, E., Guerrero, A., Bui, A. L., Sastry, N., & Schickedanz, A. (2021). Discrimination and subsequent mental health, substance use, and well-being in young adults. *Pediatrics, 148*(6). https://doi.org/10.1542/peds.2021-051378
Lima, M. L., Marques, S., Muiños, G., & Camilo, C. (2017). All you need is Facebook friends? Associations between online and face-to-face friendships and health. *Frontiers in Psychology, 08*. https://doi.org/10.3389/fpsyg.2017.00068
Liu, K., Daviglus, M. L., Loria, C. M., Colangelo, L. A., Spring, B., Moller, A. C., & Lloyd-Jones, D. M. (2012). Healthy lifestyle through young adulthood and the presence of low cardiovascular disease risk profile in middle age. *Circulation, 125*(8), 996–1004. https://doi.org/10.1161/circulationaha.111.060681
Mahmoud, O., Granell, R., Peralta, G. P., Garcia-Aymerich, J., Jarvis, D., Henderson, J., & Sterne, J. (2023). Early-life and health behaviour influences on lung function in early adulthood. *The European Respiratory Journal, 61*(3), 2001316. https://doi.org/10.1183/13993003.01316-2020
Martinotti, G., Negri, A., Schiavone, S., Montemitro, C., Vannini, C., Baroni, G., Pettorruso, M., De Giorgio, F., Giorgetti, R., Verrastro, V., Trabace, L., Garcia, A., Castro, I., Iglesias Lopez, J., Merino Del Villar, C., Schifano, F., & di Giannantonio, M. (2020). Club drugs: Psychotropic effects and psychopathological characteristics of a sample of inpatients. *Frontiers in Psychiatry, 11*, 879. https://doi.org/10.3389/fpsyt.2020.00879
Molock, S. D., & Parchem, B. (2022). The impact of COVID-19 on college students from communities of color. *Journal of American College Health, 70*(8), 2399–2405. https://doi.org/10.1080/07448481.2020.1865380
National Center for Drug Abuse Statistics. (2023). *Drug abuse statistics*. https://drugabusestatistics.org/
National Institutes of Health. (2022). *How much sleep is enough*. https://www.nhlbi.nih.gov/health/sleep-deprivation/how-much-sleep
National Overview of STDs, 2021. (2023, April 11). Centers for Disease Control and Prevention. https://www.cdc.gov/std/statistics/2021/overview.htm
Neal, S., Channon, A. A., Chandra-Mouli, V., & Madise, N. (2020). Trends in adolescent first births in sub-Saharan Africa: A tale of increasing inequity? *International Journal for Equity in Health, 19*(1). https://doi.org/10.1186/s12939-020-01251-y
O'Connor, D. B., Thayer, J. F., & Vedhara, K. (2021). Stress and health: A review of psychobiological processes. *Annual Review of Psychology, 72*, 663–688. https://doi.org/10.1146/annurev-psych-062520-122331
Oi, K. (2023). Widening, narrowing, and persistence of socioeconomic gaps between sexual minorities and heterosexuals across adulthood. *Journal of Homosexuality, 70*(13), 3213–3246. https://doi.org/10.1080/00918369.2022.2090885
Olivares, L. A. F., De León, L. G., & Fragoso, M. I. (2020). Skeletal age prediction model from percentage of adult height in children and adolescents. *Scientific Reports, 10*, 15768. https://doi.org/10.1038/s41598-020-72835-5
Ozbay, F., Johnson, D. C., Dimoulas, E., Morgan, C. A., Charney, D., & Southwick, S. (2007). Social support and resilience to stress: From neurobiology to clinical practice. *Psychiatry (Edgmont), 4*(5), 35–40. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2921311/

Potenza, M. N. (2013). Biological contributions to addictions in adolescents and adults: Prevention, treatment, and policy implications. *The Journal of Adolescent Health, 52*(2 Suppl 2), S22–S32. https://doi.org/10.1016/j.jadohealth.2012.05.007
Punzi, L., Galozzi, P., Luisetto, R., Favero, M., Ramonda, R., Oliviero, F., & Scanu, A. (2016). Post-traumatic arthritis: Overview on pathogenic mechanisms and role of inflammation. *RMD open*, *2*(2), e000279. https://doi.org/10.1136/rmdopen-2016-000279
Reilly, D. M., & Lozano, J. (2021). Skin collagen through the lifestages: Importance for skin health and beauty. *Plastic and Aesthetic Research*, *8*(2). https://doi.org/10.20517/2347-9264.2020.153
Riemann, D., Krone, L. B., Wulff, K., & Nissen, C. (2020). Sleep, insomnia, and depression. *Neuropsychopharmacology, 45*(1), 74–89. https://doi.org/10.1038/s41386-019-0411-y
SAMHSA, Center for Behavioral Health Statistics and Quality (2019). *National survey on drug use and health, 2018 and 2019*. https://www.samhsa.gov/data/sites/default/files/reports/rpt29394/NSDUHDetailedTabs2019/NSDUHDetTabsSect6pe2019.htm
Schepis, T. S., Klare, D. L., Ford, J.A., & McCabe, S. E. (2020). Prescription drug misuse: Taking a lifespan perspective. *Substance Abuse: Research and Treatment, 14*. https://doi.org/10.1177/1178221820909352
Schiel, J. E., Tamm, S., Holub, F., Petri, R., Dashti, H. S., Domschke, K., Feige, B., Goodman, M. O., Jones, S. E., Lane, J. M., Ratti, P.-L., Ray, D. W., Redline, S., Riemann, D., Rutter, M. K., Saxena, R., Sexton, C. E., Tahmasian, M., Wang, H., Weedon, M. N., Weihs, A., Kyle, S. D., & Spiegelhalder, K. (2023). Associations between sleep health and grey matter Vol. in the UK Biobank cohort (n = 33 356). *Brain Communications, 5*(4), Article fcad200. https://doi.org/10.1093/braincomms/fcad200
Seiler, A., Fagundes, C. P., Christian, L. M. (2020). The impact of everyday stressors on the immune system and health. In A. Choukèr (Ed.), *Stress challenges and immunity in space* (pp. 71–92). Springer. https://doi.org/10.1007/978-3-030-16996-1_6
Semenza, D. C., Daruwala, S., Brooks Stephens, J. R., & Anestis, M. D. (2024). Gun violence exposure and suicide among black adults. *JAMA Network Open, 7*(2), e2354953. https://doi.org/10.1001/jamanetworkopen.2023.54953
Silvani, M. I., Werder, R., & Perret, C. (2022). The influence of blue light on sleep, performance and wellbeing in young adults: A systematic review. *Frontiers in Physiology, 13*, 943108. https://doi.org/10.3389/fphys.2022.943108
Simmonds, M., Llewellyn, A., Owen, C. G., & Woolacott, N. (2016). Predicting adult obesity from childhood obesity: A systematic review and meta-analysis. *Obesity Reviews*, *17*(2), 95–107. https://doi.org/10.1111/obr.12334
Skalamera, J., & Hummer, R. A. (2016). Educational attainment and the clustering of health-related behavior among U.S. young adults. *Preventive Medicine*, *84*, 83–89. https://doi.org/10.1016/j.ypmed.2015.12.011
Sohn, S. Y., Krasnoff, L., Rees, P., Kalk, N. J., & Carter, B. (2021). The association between smartphone addiction and sleep: A UK cross-sectional study of young adults. *Frontiers in Psychiatry, 12*, 629407. https://doi.org/10.3389/fpsyt.2021.629407
Solmi, M., Radua, J., Olivola, M., Croce, E., Soardo, L., Salazar de Pablo, G., Shin, J. I., Kirkbride, J. B., Jones, P., Kim, J. H., Kim, J. Y., Carvalho, A. F., Seeman, M. V., Correll, C. U., & Fusar-Poli, P. (2022). Age at onset of mental disorders worldwide: Large-scale meta-analysis of 192 epidemiological studies. *Molecular Psychiatry 27*, 281–295. https://doi.org/10.1038/s41380-021-01161-7
Spinosa, J., Christiansen, P., Dickson, J. M., Lorenzetti, V., & Hardman, C. A. (2019). From socioeconomic disadvantage to obesity: The mediating role of psychological distress and emotional eating. *Obesity*, *27*(4), 559–564. https://doi.org/10.1002/oby.22402
Strandberg, A. K., Elgán, T. H., Feltmann, K., Jayaram Lindström, N., & Gripenberg, J. (2020). Illicit drugs in the nightlife setting: Changes in employee perceptions and drug use over a fifteen-year period. *Substance Use & Misuse, 55*(13), 2116–2128. https://doi.org/10.1080/10826084.2020.1793365
Suni, E., & Rosen, D. (2024). *Mastering sleep hygiene: Your path to quality sleep*. Sleep Foundation. https://www.sleepfoundation.org/sleep-hygiene
Suni, E., & Truong, K. (2023). *100+ sleep statistics*. Sleep Foundation. https://www.sleepfoundation.org/how-sleep-works/sleep-facts-statistics
Temple-Wong, M. M., Ren, S., Quach, P., Hansen, B. C., Chen, A. C., Hasegawa, A., D'Lima, D. D., Koziol, J., Masuda, K., Lotz, M. K., & Sah, R. L. (2016). Hyaluronan concentration and size distribution in human knee synovial fluid: Variations with age and cartilage degeneration. *Arthritis Research & Therapy*, *18*, 18. https://doi.org/10.1186/s13075-016-0922-4
Tracy, B. M., Smith, R. N., Miller, K., Clayton, E., Bailey, K., Gerrin, C., Eversley-Kelso, T., Carney, D., & MacNew, H. (2019). Community distress predicts youth gun violence. *Journal of Pediatric Surgery, 54*(11), 2375–2381. https://doi.org/10.1016/j.jpedsurg.2019.03.021
Trent, M., Dooley, D. G., Dougé, J., Cavanaugh Jr., R. M., Lacroix, A. E., Fanburg, J., Rahmandar, M. H., Hornberger, L. L., Schneider, M. B., Yen, S., Chilton, L. A., Green, A. E., Dilley, K. J., Gutierrez, J. R., Duffee, J. H., Keane, V. A., Krugman, S. D., McKelvey, C. D., Linton, J. M.,Nelson, J. L., Mattson, G., Breuner, C. C., Alderman, E. M., Grubb, L., K., Lee, J., Powers, M. E., Rahmandar, M. H., Upadhya, K. K., & Wallace, S. B. (2019). The impact of racism on child and adolescent health. *Pediatrics*, *144*(2), e20191765. https://doi.org/10.1542/peds.2019-1765
Tucker, J. S., Perez, L. G., Klein, D. J., & D'Amico, E. J. (2024). Homelessness and food insecurity during emerging adulthood: Associations with changes in behavioral and physical health over a two-year period. *The Journal of Adolescent Health, 74*(5), 1006–1011. https://doi.org/10.1016/j.jadohealth.2023.12.007
Van Ryzin, M. J., Fishbein, D., & Biglan, A. (2018). The promise of prevention science for addressing intergenerational poverty. *Psychology, Public Policy, and Law, 24*(1), 128.
Vauhkonen, T., Kallio, J., Kauppinen, T. M., & Erola, J. (2017). Intergenerational accumulation of social disadvantages across generations in young adulthood. Research in social stratification and mobility, 48, 42–52.
UNODC. (2018). *World drug report 2018, Booklet 4.Drugs and age: Drugs and associated issues among young people and older people*. https://www.unodc.org/wdr2018/prelaunch/WDR18_Booklet_4_YOUTH.pdf
U.S. Preventive Services Task Force. (2020). Behavioral counseling interventions to promote a healthy diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors: U.S. Preventive Services Task Force recommendation statement. *JAMA, 324*(20), 2069–2075. https://doi.org/10.1001/jama.2020.21749
Vierra, J., Boonla, O., & Prasertsri, P. (2022). Effects of sleep deprivation and 4-7-8 breathing control on heart rate variability, blood pressure, blood glucose, and endothelial function in healthy young adults. *Physiological Reports, 10*(13), e15389. https://doi.org/10.14814/phy2.15389
Wacks, Y., & Weinstein, A. M. (2021). Excessive smartphone use is associated with health problems in adolescents and young adults. *Frontiers in Psychiatry, 12*, 669042. https://doi.org/10.3389/fpsyt.2021.669042
Wagmiller, R. L., & Adelman, R. M. (2009). *Childhood and intergenerational poverty: The long-term consequences of growing up poor*. National Center for Children in Poverty. http://www.nccp.org/publication/childhood-and-intergenerational-poverty/
Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. *Journal of Medical Internet Research, 22*(9), e22817. https://doi.org/10.2196/22817
Westerterp, K. R. (2018). Changes in physical activity over the lifespan: Impact on body composition and sarcopenic obesity [Supplemental material]. *Obesity Reviews, 19*(1), 8–13. https://doi.org/10.1111/obr.12781
Wickrama, K. (A. S.), Lee, T. K., & O'Neal, C. W. (2022). Explaining physical health disparities and inequalities over the first half of the life course: An integrative review of Add Health studies. *Journal of Adolescent Health, 71*(6), S47–S54. https://doi.org/10.1016/j.jadohealth.2022.06.019
Williams, D. T., & Baker, R. S. (2021). Family structure, risks, and racial stratification in poverty. *Social Problems, 68*(4), 964–985. https://doi.org/10.1093/socpro/spab018
World Health Organization. (2021). *Action required to address the impacts of the COVID-19 pandemic on mental health and service delivery systems in the WHO European Region: Recommendations from the European Technical Advisory Group on the Mental Health Impacts of COVID-19*. https://iris.who.int/bitstream/handle/10665/342932/WHO-EURO-2021-2845-42603-59267-eng.pdf
World Population Review. (2024). *Gun deaths by country 2024*. https://worldpopulationreview.com/country-rankings/gun-deaths-by-country
Yang, Y. C., Gerken, K., Schorpp, K., Boen, C., & Harris, K. M. (2017). Early-life socioeconomic status and adult physiological functioning: A life course examination of biosocial mechanisms. *Biodemography and Social Biology, 63*(2), 87–103. https://doi.org/10.1080/19485565.2017.1279536
Zhong, V. W., Bancks, M. P., Schreiner, P. J., Lewis, C. E., Steffen, L. M., Meigs, J. B., Schrader, L. A., Schorr, M., Miller, K. K., Sidney, S., & Carnethon, M. R. (2019). Insulin resistance since early adulthood and appendicular lean mass in middle-aged adults without diabetes: 20 years of the CARDIA study. *Journal of Diabetes and Its Complications, 33*(1), 84–90. https://doi.org/10.1016/j.jdiacomp.2018.09.011

11.3 Sexuality in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Define young adult sexuality
- Define sexual identity and orientation
- Explain the connections between sexual activity and health
- Explain the risk factors for and consequences of sexual assault and harassment

During adolescence, David realized he was attracted to other males. Within his small community, David worried about rejection and even physical harm if other people knew he was gay and hid his sexual orientation throughout high school. Away at college in a large urban center, David joined the school's LGBTQ+ student group and was fully out to his university community; however, when he went home on breaks, he "went back in the closet." At the beginning of his senior year, he had his first sexual encounter and developed a romantic relationship with his partner. As their connection grew, it became more difficult, and more uncomfortable, to hide this important part of his life. After some minor mistruths about how holidays and breaks were being spent, David decided it was time to come out to his family. To his surprise, they were generally accepting of his sexual orientation. With their support, David was able to gradually start living as his authentic self in his hometown. Several years later, he is closer to his family than ever.

Emerging adulthood is typically a time of sexual exploration along with exploration of other aspects of ourselves. This can include the formation of social and emotional bonds with others, which we'll discuss in more detail in Chapter 12 Social and Emotional Development in Early Adulthood (Ages 18 to 29). However, sexuality also has physical and cognitive aspects, such as achieving sexual maturity and choices about sexual behavior. Here, we'll focus on these dimensions of sexuality as a part of adult development.

Sexual Maturity and Sexual Behavior

The Sexuality Education Resource Centre (SERC) in Manitoba, Canada, which states that a person's sexuality is self-defined and can change over time depending on age and circumstances. The SERC portrays sexuality as being in a "wheel" composed of different components that interact with each other (SERC MB, n.d.), as seen in Figure 11.13. Here, we'll likewise define sexuality as a person's feelings, beliefs, and behaviors regarding attraction to others, sexual activity, and gender identity.

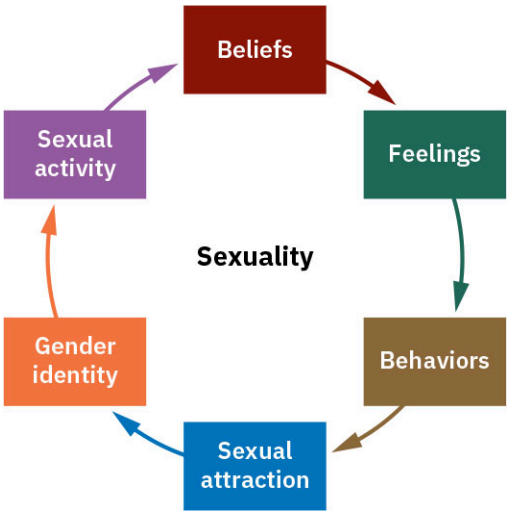


FIGURE 11.13 Sexuality involves several different components, each of which may change over time. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Sexuality is a complicated concept with many influences, including biology, culture, religion, the views of our family and friends, and the portrayals of sexuality in mass media (Macleod & McCabe, 2020; Potard et al., 2008) (Figure 11.14). Because culture evolves, so do attitudes and behaviors regarding sexuality. For several decades, the General Social Survey (GSS) from the University of Chicago has tracked U.S. societal opinions on attitudes toward various facets of sexuality. Over that time studies have found greater acceptance toward living together before marriage and having sex before marriage (GSS Data Explorer, 2022; Harding & Jencks, 2003). However, in the United States and some European countries, these behaviors are now widely accepted, though they are still frowned upon or even prohibited in other countries (Rokach & Patel, 2021). Societal acceptance of non-heterosexual relationships, and the experiences people have when coming out, likewise vary by cohort (Martos et al., 2015; van Bergen et al., 2021). In some parts of the world, young females undergo procedures

meant to decrease sexual pleasure, and marriage sometimes occurs before reaching puberty to reduce the incidence of premarital sex (Rokach & Patel, 2021; UN Women, 2019). However, in other cultures, premarital sex is considered a natural aspect of the transition from adolescent to adult and is encouraged (Christensen, 1960; Rokach & Patel, 2021).

FIGURE 11.14 Attitudes toward sexuality and sexual behavior can be affected by one's culture. (credit: "Close-up of a couple smiling and holding hands" by Chona Kasinger/Disabled and Here, CC BY 4.0)

Why do people engage in sexual activity? Beyond the obvious reasons that it's enjoyable, there are psychosocial reasons as well. Sexual activity is a way to express feelings to and establish connections with others, an important developmental task of emerging adulthood. Sexual interactions can also be a method of exploring one's identity, particularly for LGBTQ+ youth who are questioning their sexual orientation or who feel the need to downplay their sexual orientation due to social disapproval (Phillips II et al., 2019). Social factors may also influence this (Figure 11.15). A study examining heterosexual women's same-sex encounters—specifically, kissing publicly—at college parties indicated that there was no single motive for this behavior; instead, it was motivated by one of several factors, such as being drunk, wanting to experiment, and enjoying the attention this behavior produced, especially attention from men (Yost & McCarthy, 2012). Sexual activity is also considered to be a standard element of romantic relationships, and some people engage in it out of feelings of obligation or duty—feelings that can be exploited, particularly in cultures where women are expected to be submissive and marital rape isn't regarded as a crime (UN Women, 2019).

FIGURE 11.15 The experience of sexuality is unique to everyone. (credit: modification of work "YuLein" by "Yuc j"/Wikimedia Commons, CC BY 3.0)

The experience and expression of sexuality are unique to everyone. The peak of sexual activity generally occurs between the ages of eighteen and twenty-four, though the number of adults in this age group who were sexually active decreased somewhat between the years 2000 and 2018, especially men (Ueda et al., 2020). Becoming sexually active is a common part of growing up, although it's not a mandatory element (i.e., people who are asexual or who abstain from sexual activity for religious or other reasons aren't somehow "defective"). Sexual activity is also, for many people, a healthy and enjoyable aspect of their lives. However, sometimes sexual activity has unwanted health consequences, such as sexually transmitted infections or unintended pregnancy.

Sexual Orientation and Gender Identity

Recent data indicate that in the United States, about 7 percent of the population identifies as LGBTQ+, including 20 percent of adults in "Generation Z," the group born between 1997–2012 (Jones, 2024). Looking beyond the U.S., a survey of thirty countries indicated that about 9 percent of the world's population identifies as LGBTQ+, although there's a lot of variability between countries; for example, 15 percent of Brazil's population identifies as LBGTQ+, but only 4 percent of Peru's population does (Jackson, 2023). In both sets of data, the most common LGBTQ+ identity was as bisexual; about 4 percent of the U.S. and world population identify as bisexual, and 57 percent of the LGBTQ+ adults in the U.S. claim this identity (Jackson, 2023; Jones, 2024).

Figuring out one's sexual orientation and gender identity doesn't look the same for everyone. In cultures where LGBTQ+ people are stigmatized or even criminalized, there may be significant risks to coming out, and some people may choose not to do so until later in life if at all (Rosati et al., 2020). Even in countries with LGBTQ+ friendly policies, that doesn't mean that individual people or communities will be accepting. Also, "coming out" isn't a singular event, but often involves several tasks, often described as identifying an attraction to others, identifying as having a particular sexual orientation, having one's first relationship corresponding to that sexual orientation, and disclosing sexual orientation to others (Hall et al., 2021; Martos et al., 2015). These tasks typically don't occur simultaneously, although they do appear to happen in a fairly consistent order, and the specific timing of these tasks may vary. In general, men achieve these tasks earlier than women, and people identifying as gay or lesbian achieve most of these tasks earlier than people identifying as bisexual.

There are also cohort differences in that people ages forty-five to fifty-nine reported the relationship and disclosure tasks occurring later than people ages thirty to forty-four, who in turn reported these tasks occurring later than people ages eighteen to twenty-nine. These differences likely reflect changing societal attitudes regarding the acceptability of non-heterosexual relationships (Martos et al., 2015; van Bergen et al., 2021).

The study by Martos and colleagues indicates that identifying as lesbian, gay, or bisexual commonly happens in mid-adolescence, but disclosure to others may not occur until emerging adulthood (2015). Emerging adulthood, as we've already seen, is a time of continued identity exploration and commitment after we've gained more independence. This pulling away from our family is often accompanied by increased connections with similar peers. Studies of college students in the United States suggest that between 7 percent and 14 percent of heterosexual women and roughly 4 percent of men report having at least one same-sex encounter. These rates are lower in other countries, such as Thailand, most likely due to cultural differences in the acceptability of same-sex involvement (Morgan, 2013). Heterosexual women consistently report more same-sex attraction and encounters than heterosexual men do, potentially because of internalized standards of "appropriate" male behavior and a general greater incidence of sexual fluidity in women (Morgan, 2013; Yost & McCarthy, 2012) (Figure 11.16).

FIGURE 11.16 Sexual attraction and sexual experiences are determined by a complex combination of factors. (credit: modification of work "Nick and Andy celebrate their commitment in Minnesota" by Freedom to Marry/Flickr, CC BY 2.0)

Sexually Transmitted Infections

Because sexual activity generally peaks during this time, it's not surprising that the years from ages eighteen to twenty-four are also the peak years of risk for contracting a **sexually transmitted infection (STI)**, a disease caused by certain types of viruses, bacteria, or microorganisms and spread through contact with bodily fluids such as semen and blood. According to the Centers for Disease Control and Prevention (CDC), in 2022 almost half the new cases of STIs occurred in people between fifteen and twenty-four years of age (CDC, 2024). The use of the phrase "sexually transmitted" is a little misleading, because some STIs can be acquired outside of sexual activity; for example, HIV can be passed to nursing babies through breastmilk. However, regardless of the mode of transmission, the health effects of STIs are the same.

There are several different STIs, each with its own cause. Syphilis, chlamydia, and gonorrhea are caused by bacteria. Trichomoniasis is caused by a parasite. Common symptoms of these four STIs are painful urination, discharge (including blood) from the genitals or anus, and pelvic or abdominal pain, although some people may not have any symptoms. These STIs can be treated with antibiotics; however, a person can get re-infected if they come into contact with the bacteria/parasite again. It's also important to take the antibiotics as directed, including taking all the medicine even if symptoms improve. Only taking some of an antibiotic prescription is believed to cause bacteria to become drug-resistant (Muteeb et al., 2023), making future infections harder to treat.

Other STIs are caused by viruses. Genital warts are caused by the human papillomavirus (HPV) and typically occur as small cauliflower-like bumps on the genitals, although some people may not have any symptoms. These warts can be treated with special medicine (not the same over-the-counter medicine used to treat warts on other parts of the body like the fingers). Herpes is caused by the virus *herpes simplex*, which comes in two forms. Herpes simplex virus type 1 (HSV-1) typically causes "oral herpes" and most often appears as cold sores around the mouth. HSV-1 isn't technically an STI, although it can be contracted from a person with HSV-1 through kissing or oral sex. Most people with HSV-1 get it some way other than sexual contact, such as sharing a cup with an infected person, and it's very common in childhood. Herpes simplex virus type 2 (HSV-2), on the other hand, is usually spread just through sexual activity, although it can also be passed to babies during a vaginal birth. It typically appears as blisters or sores on the genitals, although again some people may not have any symptoms. The blisters may go away after treatment with medication, but may come back during times of illness or stress. When we talk about someone "having herpes," we're most often talking about HSV-2, though not always.

The human immunodeficiency virus (HIV) produces different symptoms than HPV and HSV-2. The initial infection typically involves not warts or sores on the genitals, but flu-like symptoms such as fever, chills, fatigue, and a sore throat. Often these symptoms go away within a couple of weeks, and then the person may not have any symptoms for as many as ten to fifteen years (HIV.gov, 2022). Unfortunately, this means that people may unknowingly spread HIV to others during that time. Also, without treatment, the virus slowly destroys the body's immune system, and the person eventually develops severe medical problems such as pneumonia, tuberculosis, dementia, and some types of cancers. Some of these are opportunistic infections, medical conditions that occur more frequently in people with weakened immune systems who can't fight them off. An HIV-positive person who develops these types of medical problems is now said to have acquired immunodeficiency syndrome (AIDS), a late stage of HIV infection in which the body's immune system is significantly weakened and susceptible to a wide variety of diseases.

A viral STI can't be treated with antibiotics, and a person with HPV or HSV-2 will carry the virus for the rest of their life. They may need to take medication regularly to prevent or treat flare-ups. Similarly, a person with HIV will need medication lifelong to prevent the virus from continuing to multiply inside their body. With early and high-quality medical care, they can enjoy good health and quality of life for many years.

The incidence of STIs is unequal across the population. Non-Hispanic Black individuals make up only 12.6 percent of the U.S. population but account for 31 percent of chlamydia, gonorrhea, and syphilis cases. This high proportion is likely due not to a greater incidence of sexual behavior, but to lack of access to reproductive and sexual health care (CDC, 2024), typical for marginalized groups. For example, HIV is more common among men who have sex with men (CDC, 2021); in the early days of the HIV pandemic, the disease wasn't taken seriously and people with HIV were treated poorly because both being gay and having a disease were stigmatized.

Diagnosing and treating STIs is crucial to avoid permanent health consequences. HPV is known to cause six types of cancer, including of the cervix, penis, and vagina (National Cancer Institute, 2023). HPV can't be eliminated from the body, but a person who knows they have it can get regular medical checkups to detect cancer early enough for treatment. Chlamydia, gonorrhea, and syphilis can all cause infertility, chronic pelvic

pain, and complications in pregnancy such as premature birth. If untreated for decades, syphilis can damage the brain and produce blood clots, stroke, and dementia. Treatment for HIV works best if started early, and while people who are HIV-positive may not know for several years, testing is available and recommended.

The stigma associated with STIs—and sometimes with sexual activity in general—can prevent people from seeking treatment. Deciding to engage in sexual activity requires taking increased responsibility for monitoring your health, however, including getting regular STI testing and being honest with health care providers about behaviors and symptoms.

In recent years, treatments for HIV have dramatically improved meaning that most people with HIV can manage the virus through antiretroviral therapy (ART). ART involves taking medicines that allow people to get and stay at a level of virus suppression that helps them to stay healthy and means they will not transmit HIV to other during sexual intercourse (CDC, 2024).

Pregnancy in Early Adulthood

You learned earlier about the process and milestones of pregnancy and childbirth (Chapter 2 Genetic, Prenatal, and Perinatal Health). Pregnancy is exciting and welcome news for many (Figure 11.11), but not for all. "Unintended pregnancy" refers to any situation in which a person becomes pregnant without intending to.

In the United States, approximately 3.6 million people give birth each year, with 48.6 percent of these people being between the ages of eighteen and twenty-nine (Osterman et al., 2024). Determining how many of these pregnancies are unintended is challenging because many of them are likely to occur among people who aren't married, and being a single parent is still associated with some stigma in many cultures. Therefore, people may not report this information thoroughly.

FIGURE 11.17 Pregnancy and parenthood are major life changes. (credit: "Pregnant woman" by Brit/nappy, Public Domain)

As you learned in Chapter 2 Genetic, Prenatal, and Perinatal Health, pregnancy causes many physical changes, which can be hard on the body during the pregnancy and postpartum period. Worldwide, maternal mortality is still a concern, with around 287,000 birth mothers dying in childbirth each year—most often in middle and lower income countries (World Health Organization, 2024). However, most pregnancy-related deaths can be prevented through effective prenatal and perinatal care (CDC, 2024) and the birth mother's body generally physically recovers from the pregnancy and delivery during the first couple months after delivery (Lopez-Gonzalez & Kopparapu, 2022). For those who decide to keep and raise a baby, becoming a parent is a significant transition that's expensive, emotionally challenging but often rewarding, and time-consuming.

This is likely one of the reasons, we see a societal trend to delay parenthood until later in early adulthood or even in middle adulthood for those who choose to become parents. In addition, we have seen trends of more people choosing not to become parents often citing financial concerns (APA, 2024). Mothers in particular still

take on a higher caregiving load in most families with small children and additionally face a high deal of societal pressure, often known as "mommy guilt" to bear the main responsibility of the child's wellbeing (Constantinou et al., 2020). This pressure can be present across family types including in particular single mothers and heterosexual couples, even when the couple has a high level of shared responsibility. While fathers take on much more caregiving responsibilities than was common in decades past in the U.S., mothers are still much more likely to reduce or leave the workforce than fathers (Heggeness, 2020).

Choosing to become a caregiver and starting a family can be a fulfilling part of an individuals identity. Planned parenting often brings psychological fulfillment and wellbeing, enjoyment of family socioemotional experiences, and can contribute to a person's sense of meaning in life (Chen et al., 2016). This can mean that for many becoming a parent can be another important part of identity formation and commitment, best facilitated by having social support, control over the choice to become a parent, and knowledge about parenting effectively (Chen et al., 2016; Piotrowski, 2020).

Parenthood can also affect the transition to adulthood. Becoming a parent is a very adult, and often rewarding, responsibility that can help define our identity. But in early adulthood it can also interfere with the achievement of identity tasks such as furthering an educational or training program and starting a career (Landberg et al., 2019). People may find an identity in becoming a parent, but it may also delay or prevent them from exploring other facets of their identity; of course, we can say the same about other choices we commit to.

Both STI and pregnancy prevention share some similar strategies, and some foundational elements. First, without completely avoiding sexual activity (known as **abstinence**), guaranteed prevention of STIs and pregnancy is nearly impossible. Thus, there is no truly “safe sex” and precautions instead can provide “safer sex.” When choosing a pregnancy or STI prevention method, it’s important to be aware of your health status and use good decision-making to determine what’s likely to work best for you and any partners.

Abstinence is often said to be the most reliable method for avoiding STIs and pregnancy (CDC, 2023). However, not everyone understands “abstinence” the same way. Some people consider abstinence to mean avoiding any kind of sexually-related contact, including oral sex and mutual masturbation. Others use this term only to mean avoiding penetrative intercourse (Byers et al., 2009; Hans & Kimberly, 2011). These varying definitions of this term can give different impressions about a person’s sexual activity and could put them at risk for contracting an STI. For example, a person who engages in oral sex but not intercourse could contract herpes while still considering themselves abstinent. When discussing abstinence, either in a personal conversation, a health-related setting, or a research context, it’s important to make sure you know how others define abstinence.

Other behavior-based STI prevention methods include being in a monogamous relationship, reducing one’s number of sex partners, and avoiding drug and alcohol use. Because drugs and alcohol can impair judgment, people who use substances are at higher risk of STIs because they may engage more often in risky sexual behaviors like unprotected sex or sex with multiple partners (Baskin-Sommers & Sommers, 2006; Kusunoki & Barber, 2020). There are also medications (both shots and pills) to reduce the chances of getting HIV. These medications are called **pre-exposure prophylaxis (PrEP)** and are meant to be taken on a regular basis—a similar strategy as birth control pills, but for preventing HIV and not pregnancy.

Apart from abstinence, condoms are the only method effective at preventing both pregnancy and STIs. Condoms are called a **barrier method** because they prevent exchange of bodily fluids. Another barrier method used for STI prevention is a **dental dam**, a thin piece of latex or polyurethane that’s placed over the vulva or anus prior to oral sex. Other barrier methods that are used as pregnancy prevention but not STI prevention include diaphragms, cervical caps, and contraceptive sponges. Each of these is inserted into the vagina prior to sex and work to keep semen from reaching the uterus. They’re also typically used with **spermicide**, a gel that kills sperm cells, increasing the effectiveness of pregnancy prevention. All of these barrier methods have to be placed before sex and removed afterward; they’re not left in place between sexual encounters. Removal should

be done following the product's directions or as advised by a health-care provider to optimize their effectiveness.

Some pregnancy prevention methods are hormone based. Birth control pills, contraceptive shots, and contraceptive implants each contain the synthetic hormone progestin, which prevents ovulation. Contraceptive shots and implants are long-lasting (three months and five years respectively). Birth control pills must be taken daily, and medications like antibiotics can have contraindications that may make them ineffective.

Other methods of pregnancy prevention are more complex. An intrauterine device (IUD) is a small T-shaped device that's inserted into the uterus via the vagina. It works by either preventing ovulation or reducing the movements of sperm. Unlike a diaphragm, an IUD can stay in place long-term (several years); however, it must be inserted and removed by a health-care provider. There are also surgical birth control methods.

LINK TO LEARNING

Many college campuses as well as local community health clinics may have health centers where you can get tested for STIs. However, if you're not able to access this service or choose not to, there are tools you can use to find a testing center.

- If you're in the United States, you can find STI testing locations (https://openstax.org/r/104STITestUS) through the CDC website.
- If you're in Europe, you can use the European Test Finder (https://openstax.org/r/104STITestEurop) website to search by country, city, and type of services needed.
- If you're in Africa, South America, or Asia, you can use the Building Healthy Online Communities (https://openstax.org/r/104STITestBHOC) site.

Sexual Harassment and Sexual Violence

So far we've been talking about sexual activity as always consensual, relatively common, and hopefully enjoyable aspects of life in early adulthood. Unfortunately, some experiences fall outside of that: sexual harassment and sexual violence.

Any unwanted sexual activity that is forced on another person in any way without their consent is considered an act of sexual violence (National Sexual Violence Resource Center, 2010). Force can involve verbal, physical, or emotional behaviors, such as manipulation. Sexual violence may include assault, abuse, harassment, exploitation, public exposure, or stalking behaviors. Regardless of the type of sexual violence, all acts of sexual violence involve harm to another person. **Sexual harassment** is a broad term referring to a range of actions representing unwanted physical or verbal attention with a sexual basis. It most commonly involves behaviors that make a person uncomfortable and interfere with that person's ability to engage in typical activities such as going to school, working, or participating in extracurricular settings, like a sports club or religious group. These behaviors don't even have to be directed at a specific person to be considered sexual harassment. Repeatedly making negative comments about a specific gender or talking about sexual acts or fantasies could constitute sexual harassment even if it just occurred within earshot of a person who wasn't directly included in the conversation. Sexual harassment often involves a power differential in that the harasser may be in a position of authority, such as a boss, teacher, or spiritual leader. However, this isn't a requirement to define sexual harassment; it can occur among peers, such as among teammates or classmates. Some acts of sexual harassment, such as rape or unwanted touching, are also considered sexual assault. **Sexual assault** is defined as nonconsensual sexual contact. Consent must be explicitly given; "not saying no" is not the same as saying "yes." A person who's unconscious or too scared to refuse has not given consent. Neither has a person who's unable to make informed decisions due to intoxication or cognitive impairment.

LINK TO LEARNING

If you or someone you know are experiencing sexual assault or harassment, reach out to the Rape, Abuse & Incest National Network (RAINN) (https://openstax.org/r/104RAINN) for help. Call the National Sexual Assault Hotline at 1-800-656-HOPE or chat through the RAINN website for immediate, confidential support.

Incidence of Sexual Harassment and Assault

How common are sexual harassment and sexual assault in early adulthood? According to a 2019 survey of 893 adults in the United States, nearly a third of these participants (32.7 percent) reported experiencing sexual harassment between the ages of eighteen and twenty-nine, with 24.6 percent reporting experiencing sexual assault. (In this study, sexual harassment and sexual assault weren't mutually exclusive categories; a person could report experiencing both.) For context, the rates of sexual harassment in this age group were 105 percent higher than for respondents over age thirty, and the rates of sexual assault were 65 percent higher. Women were more likely than men to report sexual harassment (37.4 percent versus 22.4 percent) and sexual assault (36.0 percent versus 16.0 percent (Mumford et al., 2020). These rates in general are also comparable to many other countries; statistics indicate that approximately a third of women worldwide experience sexual violence (UN Women, 2019).

Unfortunately, college campuses—common environments for young adults—aren't immune to these problems. A large-scale study of sexual assault and harassment reports on college campuses between 1966–2017 found that between 11–73 percent (median 49 percent) of women reported sexual harassment at college. Sexual harassment was more likely to happen to women who were younger, economically insecure, and of an ethnic or sexual minority group. All of these factors indicate a vulnerable population, and perhaps not surprisingly, this study noted that over half these incidents had gone unreported to university personnel. Interestingly, data indicated rates of sexual assault and violence declined during the period being examined, While sexual violence is a higher risk for women and girls, research estimates that 27 percent of men have been victimized at some point in their lives (Thomas & Kopel, 2023). Additionally, transgender individuals are at a much higher risk of being victims of sexual violence (Stotzer, 2009). Due to the prevalence of these crimes, prevention and intervention work needs to include a community and societal wide response.

Preventing Sexual Violence and Sexual Harassment

One issue sometimes noted is that many "prevention efforts" are aimed at potential victims, not at potential perpetrators. For example, telling people to keep an eye on their drinks at parties is helpful, but it would be even more helpful if other people didn't slip drugs into others' drinks in the first place. Suggesting that women not walk alone at night is another example that focuses the burden of preventing sexual violence on women and unintentionally may contribute to victim blaming and other rape myths. Higher endorsement of rape myths, including those that put the burden on potential victims, is associated with an increased likelihood of perpetrating sexual assault as well as with a higher rate of sexual assault in that community—including on college campuses (O'Connor, 2021). At the root of many cases of sexual- and gender-based discrimination appear to be individual and cultural beliefs about gender roles and behavior; e.g., men are expected to be dominant while women are expected to be submissive, even regarding consenting to sex (UN Women, 2019). These beliefs are common in many African and Asian cultures (de Villiers et al., 2021; Olson-Strom & Rao, 2020) and is also reflected in the Latino values of *machismo* (Kim et al., 2017). In the United Kingdom, "lad culture"—which includes sexist and homophobic behavior as well as heavy alcohol consumption and a tendency toward violence—is associated with the beliefs that men are entitled to sexual intercourse, women secretly enjoy being raped, and verbal, physical, and sexual harassment are acceptable male behaviors (Phipps et al., 2018). Teaching and practicing safety behaviors is important, but a more proactive approach would involve addressing the reasons why people mistreat others in the first place.

Some groups are attempting to do just that. For example, Men as Peacemakers, a nonprofit organization

located in Minnesota, provides programming aimed at teaching men to avoid and resist all forms of violence against women, including some programming aimed specifically at college students. Similarly, in South Africa, the One Man Can Intervention addresses specific cultural views of gender norms and encourages men to become advocates for gender equality in all forms, including ending sexual violence. While data regarding the effectiveness of these types of programs are somewhat mixed, the results generally lend support to the idea that both attitudes and behaviors can be changed and thus lead to lower rates of discrimination and maltreatment (de Villiers et al., 2021; Flood, 2022; Wright et al., 2020).

The anti-sexual assault movement began in the U.S. with major changes in legal definitions shifting up through the 1990s. For example, marital rape was not recognized as a crime in every U.S. state until 1993 and the Violence Against Women Act was pivotal in shaping current policies and advocacy resources beginning in 1994 (Tulane University, 2024; WCSAP, 2024). This was followed by the establishment of many organizations and a wealth of advocacy work, often performed by women and survivors, to both prevention sexual violence and support recovery for survivors of sexual violence (Tulane University, 2024).

Other changes occur at a public policy level. In the United States, for example, Title IX is a federal policy aimed at addressing sexual and gender-based discrimination in educational settings. It contains regulations for reporting and responding to incidents of sexual assault, abuse, and harassment, including provision of counseling services to survivors, even if these incidents didn't involve the school environment. However, changes were made during the Trump administration due to concerns about lack of due process for people accused of sexual violence. Following these changes, sexual violence on college campuses increased by 3 percent for women and 1.5 percent for men (Rochester, 2022). Tavares and Wodon (2018) theorized that higher education was weaker than the workplace in addressing sexual harassment, noting that as of 2017, 60 percent of countries worldwide lacked laws addressing sexual harassment in education settings, while only 21 percent lacked these laws for the workplace. Finally, sexual violence can be prevented by focusing more on improved early sexual education and a better understanding of consent culture, to learn more refer to 9.2 Puberty, Sexual Behavior, and Sexual Health in Adolescence.

INTERSECTIONS AND CONTEXTS

Title IX and Equivalents around the World

Title IX was first enacted in the United States in 1972 to address inequities in education (Rochester, 2022), but has since been expanded to include all forms of discrimination based on sex and gender. Under this policy, any educational institutions receiving federal money are required to provide a fair educational experience to their students regardless of sex, gender, sexual orientation, or gender identity. This includes avoiding gender-based discrimination and preferential treatment in the classroom, allocating equivalent resources to athletics teams regardless of player gender, and responding quickly and appropriately to incidents of sexual harassment, sexual abuse, and sexual assault.

Do countries outside the U.S. have similar policies to protect students? It depends on where you go. In 2011, the human rights organization Council of Europe (CoE) developed a treaty called the "Istanbul Convention," which states that governments have a responsibility to prevent violence against women. This treaty has been ratified by thirty-nine of the forty-six nations that belong to the CoE, including twenty-two of the twenty-seven nations in the European Union (Council of Europe, 2011), and has led to improvements in how many of those nations handle these issues. For example, in France, each public university is now required to have an employee trained to handle issues of gender inequality and discrimination, including sex- and gender-based maltreatment (Rochester, 2022).

In other places, the outlook is less optimistic, often in ways that reflect the gender-related views of the larger culture (Eng & Yang, 2020; Rao & Olson-Strom, 2020). As of 2017, 65 percent of countries in the East Asia and Pacific region and 86 percent of countries in the Middle East and North African region lacked laws addressing

sexual harassment in education settings (Tavares & Wodon, 2018). In some Asian cultures, textbooks and course content downplay or even eliminate discussion of women's contributions to the field of study, and instructors may openly show bias toward male students (Olson-Strom & Rao, 2020). LGBTQ+ students may have even more difficulty due to the stigma that exists in many cultures; for example, expressions of same-sex or same-gender sexual activity or interest are considered criminal acts in some nations, including Malaysia and Brunei. This makes it hard for students to seek help and also makes it difficult for public universities to support LGBTQ+ students due to likely backlash (Bondestam & Lundqvist, 2020; Eng & Yang, 2020).

References

Baskin-Sommers, A., & Sommers, I. (2006). The co-occurrence of substance use and high-risk behaviors. *Journal of Adolescent Health, 38*(5), 609–611. https://doi.org/10.1016/j.jadohealth.2005.07.010

Bondestam, F., & Lundqvist, M. (2020). Sexual harassment in higher education – A systematic review. *European Journal of Higher Education, 10*(4), 397–419. https://doi.org/10.1080/21568235.2020.1729833

Byers, E. S., Henderson, J., & Hobson, K. M. (2009). University students' definitions of sexual abstinence and having sex. *Archives of Sexual Behavior, 38*(5), 665–674. https://doi.org/10.1007/s10508-007-9289-6

Centers for Disease Control and Prevention. (2021). *New HIV diagnoses and people with diagnosed HIV in the US and dependent areas by area of residence, 2021*. U.S. Department of Health and Human Services. https://www.cdc.gov/hiv/basics/statistics.html

Centers for Disease Control and Prevention. (2023). *How you can prevent sexually transmitted diseases*. U.S. Department of Health and Human Services. https://www.cdc.gov/std/prevention/default.htm

Centers for Disease Control and Prevention. (2024, April 12). *Treating HIV*. U.S. Department of Health and Human Services. https://www.cdc.gov/hiv/treatment/index.html

Centers for Disease Control and Prevention. (2024.) *Sexually transmitted infections surveillance, 2022*. U.S. Department of Health and Human Services. https://www.cdc.gov/std/statistics/2022/default.htm

Centers for Disease Control and Prevention. (2024, September 25). *Preventing pregnancy-related deaths*. U.S. Department of Health and Human Services. https://www.cdc.gov/maternal-mortality/preventing-pregnancy-related-deaths/index.html

Chen, E. Y. J., Enright, R. D., & Tung, E. Y. L. (2016). The influence of family unions and parenthood transitions on self-development. *Journal of Family Psychology, 30*(3), 341.

Constantinou, G., Varela, S. M., & Buckby, B. (2021). Reviewing the experiences of maternal guilt – the "motherhood myth" influence. *Health Care for Women International, 43*(3), 1–25. https://doi.org/10.1080/07399332.2020.1835917

Christensen, H. T. (1960). Cultural relativism and premarital sex norms. *American Sociological Review*, 31–39.

Council of Europe. (2011). *Explanatory report to the Council of Europe Convention on preventing and combating violence against women and domestic violence*. https://rm.coe.int/1680a48903

de Villiers, T., Duma, S., & Abrahams, N. (2021). "As young men we have a role to play in preventing sexual violence": Development and relevance of the men with conscience intervention to prevent sexual violence. *PloS One, 16*(1), e0244550. https://doi.org/10.1371/journal.pone.0244550

Eng, K. H., & Yang, D. W. (2020). Gender and sexual diversity in Asian universities. In C. S. Sander & N. W. Gleason (Eds.), *Diversity and inclusion in global higher education: Lessons from across Asia* (pp. 231–262). Palgrave Macmillan. https://library.oapen.org/bitstream/handle/20.500.12657/23168/1/1006985.pdf#page=237

Flood, M. (2022). Sexual violence prevention with men and boys as a social justice issue. In L. M. Orchowski & A. Berkowitz (Eds.), Engaging boys and men in sexual assault prevention: Theory, research and practice (pp. 49–70). Elsevier. https://xyonline.net/content/sexual-violence-prevention-men-and-boys-social-justice-issue

GLAAD. (2024a). Glossary of terms: LGBTQ. In *GLAAD Media Reference Guide – 11th Edition*. https://glaad.org/reference/terms

GLAAD. (2024b). Glossary of terms: Transgender. In *GLAAD Media Reference Guide – 11th Edition*. https://glaad.org/reference/trans-terms

General Social Survey (GSS) Data Explorer (2022). *Key trends*. https://gssdataexplorer.norc.org/trends

Hall, W. J., Dawes, H. C., & Plocek, N. (2021). Sexual orientation identity development milestones among lesbian, gay, bisexual, and queer people: A systematic review and meta-analysis. *Frontiers in Psychology, 12*, 753954. https://doi.org/10.3389/fpsyg.2021.753954

Hans, J. D., & Kimberly, C. (2011). Abstinence, sex, and virginity: Do they mean what we think they mean? *American Journal of Sexuality Education, 6*(4), 329–342. https://doi.org/10.1080/15546128.2011.624475

Harding, D. J., & Jencks, C. (2003). Changing attitudes toward premarital sex: Cohort, period, and aging effects. *The Public Opinion Quarterly, 67*(2), 211–226.

Heggeness, M. L. (2020). Estimating the immediate impact of the COVID-19 shock on parental attachment to the labor market and the double bind of mothers. *Review of Economics of the Household, 18*, 1053–1078. https://doi.org/10.1007/s11150-020-09514-x

HIV.gov (2022). *Symptoms of HIV*. https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/symptoms-of-hiv

Jackson, C. (2023). *Pride month 2023: 9 percent of adults identify as LGBT+*. Ipsos. https://www.ipsos.com/en/pride-month-2023-9-of-adults-identify-as-lgbt

Jones, J. M. (2024). *LGBTQ+ identification in U.S. now at 7.6 percent*. Gallup. https://news.gallup.com/poll/611864/lgbtq-identification.aspx

Kim, T., Draucker, C. B., Bradway, C., Grisso, J. A., & Sommers, M. S. (2017). Somos hermanas del mismo dolor (we are sisters of the same pain): Intimate partner sexual violence narratives among Mexican immigrant women in the United States. *Violence Against Women, 23*(5), 623–642. https://doi.org/10.1177/1077801216646224

Kusunoki, Y., & Barber, J. S. (2020). The dynamics of intimate relationships and contraceptive use during early emerging adulthood. *Demography, 57*(6), 2003–2034. https://doi.org/10.1007/s13524-020-00916-1

Landberg, M., Lee, B., & Noack, P. (2019). What alters the experience of emerging adulthood? How the experience of emerging adulthood differs according to socioeconomic status and critical life events. *Emerging Adulthood, 7*(3), 208–222. https://doi.org/10.1177/2167696819831793

Lopez-Gonzalez, D.M., Kopparapu, A.K. (2024). Postpartum care of the new mother. [Updated 2022 Dec 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK565875/

Macleod, A., & McCabe, M. (2020). Defining sexuality in later life: A systematic review [Supplemental material]. *Australasian Journal on Ageing, 39*(1), 6–15. https://doi.org/10.1111/ajag.12741

Martos, A., Nezhad, S., & Meyer, I. H. (2015). Variations in sexual identity milestones among lesbians, gay men and bisexuals. *Sexuality Research & Social Policy, 12*(1), 24–33. https://doi.org/10.1007/s13178-014-0167-4

Medaris, A. (2024, July 1). *Americans are having fewer kids—if they have them at all*. American Psychological Association. https://www.apa.org/monitor/2024/07/fewer-children

Morgan, E. M. (2013). Contemporary issues in sexual orientation and identity development in emerging adulthood. *Emerging Adulthood, 1*(1), 52–66. https://doi.org/10.1177/2167696812469187

Mumford, E. A., Potter, S., Taylor, B. G., & Stapleton, J. (2020). Sexual harassment and sexual assault in early adulthood: National estimates for college and non-college students. *Public Health Reports, 135*(5), 555–559. https://doi.org/10.1177/0033354920946014

Muteeb, G., Rehman, M. T., Shahwan, M., & Aatif, M. (2023). Origin of antibiotics and antibiotic resistance, and their impacts on drug development: A narrative review. *Pharmaceuticals, 16*(11), 1615. https://doi.org/10.3390/ph16111615

National Cancer Institute. (2023). *HPV and cancer*. https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-and-cancer

National Sexual Violence Resource Center (2010). What is sexual violence? [Fact sheet]. https://www.nsvrc.org/sites/default/files/2012-03/Publications_NSVRC_Factsheet_What-is-sexual-violence_1.pdf

Olson-Strom, S., & Rao, N. (2020). Higher education for women in Asia. In C. S. Sander & N. W. Gleason (Eds.), *Diversity and inclusion in global higher education: Lessons from across Asia* (pp. 263–282). Palgrave Macmillan. https://library.oapen.org/bitstream/handle/20.500.12657/23168/1/1006985.pdf#page=269

Osterman, M. J. K., Hamilton, B. E., Martin, J. A., Driscoll, A. K., & Valenzuela, C. P. (2024). *Births: Final data for 2022*. National Vital Statistics Reports, Vol 73, No 2. https://dx.doi.org/10.15620/cdc:145588

O'Connor J. (2021). The Longitudinal Effects of Rape Myth Beliefs and Rape Proclivity. *Psychology of men & masculinity, 22*(2), 321–330. https://doi.org/10.1037/

men0000324
Phillips II, G., Beach, L. B., Turner, B., Feinstein, B. A., Marro, R., Philbin, M. M., Salamanca, P., Felt, D., & Birkett, M. (2019). Sexual identity and behavior among U.S. high school students, 2005–2015. *Archives of Sexual Behavior, 48*(5), 1463–1479. https://doi.org/10.1007/s10508-019-1404-y
Phipps, A., Ringrose, J., Renold, E., & Jackson, C. (2018). Rape culture, lad culture and everyday sexism: Researching, conceptualizing and politicizing new mediations of gender and sexual violence. *Journal of Gender Studies, 27*(1), 1–8. https://doi.org/10.1080/09589236.2016.1266792
Piotrowski K. (2020). How good it would be to turn back time: Adult attachment and perfectionism in mothers and their relationships with the processes of parental identity formation. *Psychologica Belgica*, *60*(1), 55–72. https://doi.org/10.5334/pb.492
Potard, C., Courtois, R., & Rusch, E. (2008). The influence of peers on risky sexual behaviour during adolescence. *The European Journal of Contraception & Reproductive Health Care, 13*(3), 264–270. https://doi.org/10.1080/13625180802273530
Rokach, A., & Patel, K. (2021). *Human sexuality: Function, dysfunction, paraphilias, and relationships*. Academic Press. https://doi.org/10.1016/B978-0-12-819174-3.00015-2
Rosati, F., Pistella, J., Nappa, M. R., & Baiocco, R. (2020). The coming-out process in family, social, and religious contexts among young, middle, and older Italian LGBQ+ adults. *Frontiers in Psychology, 11*, 617217. https://doi.org/10.3389/fpsyg.2020.617217
Sexuality Education Resource Centre MB. (n.d.). *Sexuality wheel*. https://serc.mb.ca/sexual-health-info/the-basics/what-is-sexuality/sexuality-wheel/
Stotzer, R. L. (2009). Violence against transgender people: A review of United States data. *Aggression and Violent Behavior, 14*(3), 170–179.
Taylor, J., Bernstein, A., Waldrop, T., & Smith-Ramakrishnan, V. (2022, March 2). *The worsening U.S. maternal health crisis in three graphs*. The Century Foundation.
Thomas, J. C., & Kopel, J. (2023). Male Victims of Sexual Assault: A Review of the Literature. *Behavioral sciences (Basel, Switzerland), 13*(4), 304. https://doi.org/10.3390/bs13040304
Tulane University. (n.d.). *Timeline of the history of sexual violence in the U.S.* https://allin.tulane.edu/content/timeline-history-sexual-violence-us Washington Coalition of Sexual Assault Programs. (n.d.). *History of the movement*.
Tavares, P., & Wodon, Q. (2018). *Ending violence against women and girls: Global and regional trends in women's legal protection against domestic violence and sexual harassment*. World Bank. https://pubdocs.worldbank.org/en/679221517425064052/EndingViolenceAgainstWomenandGirls-GBVLaws-Feb2018.pdf
Ueda, P., Mercer, C. H., Ghaznavi, C., & Herbenick, D. (2020). Trends in frequency of sexual activity and number of sexual partners among adults aged 18 to 44 years in the US, 2000–2018. *JAMA Network Open, 3*(6), e203833. https://doi.org/10.1001/jamanetworkopen.2020.3833
UN Women. (2019). *Progress of the World's Women 2019–2020*. https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2019/Progress-of-the-worlds-women-2019-2020-en.pdf
van Bergen, D. D., Wilson, B. D. M., Russell, S. T., Gordon, A. G., & Rothblum, E. D. (2021). Parental responses to coming out by lesbian, gay, bisexual, queer, pansexual, or two-spirited people across three age cohorts. *Journal of Marriage and Family, 83*(4), 1116–1133. https://doi.org/10.1111/jomf.12731
World Health Organization. (2024). *Maternal mortality*. https://www.who.int/news-room/fact-sheets/detail/maternal-mortality
Wright, L. A., Zounlome, N. O. O., & Whiston, S. C. (2020). The effectiveness of male-targeted sexual assault prevention programs: A meta-analysis. *Trauma, Violence & Abuse, 21*(5), 859–869. https://doi.org/10.1177/1524838018801330
Yost, M. R., & McCarthy, L. (2012). Girls gone wild? Heterosexual women's same-sex encounters at college parties. *Psychology of Women Quarterly, 36*(1), 7–24. https://doi.org/10.1177/0361684311414818

11.4 Cognitive Development in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the cognitive capabilities that develop during early adulthood
- Describe the developmental changes in social cognition associated with early adulthood
- Describe the contextual and cultural factors that influence the development of early adult cognitive capabilities

Devon finished a pipefitting apprenticeship a year ago and is now living fully on their own for the first time. They have just been offered a position managing a small group of people at work. They are excited to be promoted but anxious about overseeing others. It was challenging enough to prioritize their personal life and budget for food, bills, and rent. Now they have to learn how to prioritize projects, make major decisions at work, and delegate parts of each project to those in their work group, on top of making sure they are able to get their work done.

Some of the cognitive tasks and milestones during early adulthood include taking on more responsibilities, finding employment or a career (which may include attending college or a trade school), attaining abstract thought, increasing awareness of our own limitations and strengths, honing decision-making skills, becoming fully independent (including financially independent), being less swayed by peer pressure, and adjusting to changes in relationships with family. Developing and honing new cognitive skills during this time is essential for solving the kinds of complex problems we will encounter for the rest of our lives. Fortunately, our brain continues to develop in ways that make these tasks easier.

Changes in the Brain during Early Adulthood

Just like the rest of the body, the brain reaches maturity and peak functioning during early adulthood. However, we continue to develop new synapses—a lifelong process—and myelination of our axons continues, particularly in the prefrontal cortex (Dvorak et al., 2021; Hochberg & Konner, 2020; Kwon et al., 2020; Mills et al., 2021), throughout the lifespan. These changes in the brain within the area of the prefrontal cortex are mostly completed by age 25, and are associated with improved cognitive functioning, specifically in the efficacy and speed of processing and performance of higher-order functions like planning, organizing, solving problems, and resisting impulses (Hochberg & Konner, 2020; Kwon et al., 2020).

In addition to the development within the prefrontal cortex, the process of synaptic pruning continues until

the mid-20's. We also know from research that , with the prefrontal cortex is the last area where synaptic pruning finally winds down within the brain (Cohen et al., 2016; Dennis et al., 2013). These two processes, final synaptic pruning and the continued myelination of nerve fibers in this area, helps increase the efficiency of signals between neurons within the brain. Instead of processing information locally, the brain begins to connect more distant regions, allowing information to be processed in many areas (Hochberg & Konner, 2020; Taber-Thomas & Pérez-Edgar, 2015). Once these connections have been well established, both impulse control and emotional control are enhanced (Simpson, 2018; Wood et al., 2017). Thus, these brain changes help young adults become better at making decisions, delaying gratification, solving problems, assessing risk, prioritizing, and regulating their emotions. Improvements don't happen all at once. For example, research conducted by Cohen and colleagues (2016) investigated differences in brain functioning between adolescents (ages thirteen to seventeen), emerging adults ages eighteen to twenty-one, and ages twenty-two to twenty-five. The prefrontal cortices of the eighteen to twenty-one-year-olds functioned more like those of adolescents than of the twenty-two to twenty-five-year-olds on a task assessing inhibition of a behavior. These results also support Arnett's theory that emerging adulthood is a discrete developmental state and involves gradual progression rather than an abrupt transition.

INTERSECTIONS AND CONTEXTS

Brain of Emerging Adults: Impulse Control and Risk-Taking Behaviors

Although people can act impulsively regardless of age, such as calling in sick for a week to attend a once-in-a-lifetime music festival or changing one's choice of college major on a whim, this type of behavior occurs more frequently in emerging adulthood than later in adulthood (Brodbeck et al., 2013). Life experience, or lack of, plays some role in the differences in risk-taking and impulsive behaviors between emerging adults and adults. However, these differences are also likely the result of changes in the frontal lobes and other brain areas (Brodbeck et al., 2013). Changes in the brain help it shift from a priority of developing skills and obtaining knowledge about the world to actually using that knowledge and skills to live as an adult.

Unfortunately, this means that while people are exploring options and making decisions more independently, their brain is still in transition, and thus, people may not always make the best decisions. Within the brain, areas that are involved in impulsive behaviors, including risk-taking and decision-making, are also involved in emotional regulation, including impulse control and emotional control. Research has found that people who had difficulty with emotional regulation, based on clinical tests and self-report are prone to more impulsive behaviors related to substance misuse and gambling (Schreiber et al., 2012). Thus, until refinements within these areas are complete, people may make impulsive decisions that bring immediate rewards instead of making decisions based on long-term rewards (Parr et al., 2022).

Another contributor to impulsivity may be the neurotransmitter dopamine. Children, teens, and adults of different ages have different amounts of dopamine in their brains, with dopamine levels decreasing as we age (Lee & Kim, 2022). Similarly, children, teens, and adults of different ages aren't all equally good at controlling impulses and making goal-based decisions, with older adults being better at this than other age groups, including younger adults. However, some younger adults appear to have less trouble with this than others, suggesting that individual differences may also be at work. Having less dopamine as we age may help us, along with our increased cognitive skills and personal experiences, to better resist impulsive behaviors (Parr et al., 2022).

Early Adult Cognitive Characteristics

Some of the cognitive abilities that develop or become refined through both physiological changes in the brain and experience in daily life are reflective thought, crystallized intelligence, post-formal thought, and dialectical thinking. Up until now, a lot of our coverage of cognitive development has focused on Piaget's theory and stages. Piaget believed that formal operational thought was the last stage in our cognitive development,

but is this actually the case? Do you currently have the same cognitive skills and reason the same way you did when you were? Put another way, do you currently have the same problems and life circumstances you had when you were fourteen?

Researchers since Piaget have proposed the existence of **post-formal thought**, a stage beyond formal operations that is more flexible, complex, and capable of recognizing more than one objectively correct answer to problems (Kincheloe & Steinberg, 1993; Sinnott, 1998; Griffin et al., 2009). Though adolescents in the formal operational stage can easily think hypothetically, they lack experience with the world and are often unable to consider as many possibilities as adults can. Adults are better able to predict likely outcomes or consequences, combining abstract thought and logic with intuition and life experience. This ability to think of potential outcomes is one of the hallmarks of post-formal thought, and it extends Piaget's ideas about formal operations to the unique skills and abilities developed during emerging adulthood and adulthood. Thus, it helps people think critically, accept contradictions and ambiguity, and understand situations they've never experienced. Table 11.4 shows some key characteristics of post-formal thought and how they may be applied in real life.

Cognitive Characteristic	What It Does	Example
Flexible	Aids our ability to transfer between forms of logic, such as between abstract and concrete thought.	A person can think concretely about their favorite video game and then abstractly about how video games can be used for education or stress relief.
Helpful in defining problems	Allows us to describe an issue.	Students in a group project might define conflicts they have as miscommunication or a personality clash.
Practical	Points us to pragmatic solutions.	Someone weighing two job offers can evaluate the practical aspects of each one (e.g., commute time, work hours, benefits) to decide which one will better meet their goals.
Open to multiple solutions	Helps us acknowledge that most problems have more than one cause and solution and that people facing the same problem may have different goals.	A marriage counselor has to consider their clients' individual situations and not take a "one size fits all" approach.
Open to paradox	Shows us that sometimes a situation that seems contradictory may work.	A student doing a term paper spends time writing an outline and researching sources before actually starting to write, enabling them to finish more efficiently than a classmate who just starts writing with no plan in mind.

TABLE 11.4 Characteristics of Post-Formal Thought

In young adulthood, we continue to use many of the cognitive abilities we acquired earlier in life. Skills like memory, perspective taking, and problem solving are still important, although we may use them for different tasks. For example, we no longer just use memory to recall information—we also use it to apply information, remembering not only facts but also how those facts can be used. Nurses must know more than what different medications do; they also have to know how medications interact, how and when they should be administered, and what a typical dosage is. This allows them to detect possible interactions and errors and provide better

patient care. We also use existing problem-solving skills to address challenges of adult life, such as what to do in case of a flat tire or how to go about finding an internship for the summer.

During early adulthood, people increase their problem-solving and decision-making skills, become aware that the world is full of gray areas, and recognize that little in life is absolute. They're better able to see that historical, cultural, and social factors play a role in events, and that different people might view the same event differently due to these factors. Thus they gain a deeper understanding of **relativism**, or the idea that cultural standards, values, and ethics are a product of the time and cultural context within which they developed, and what is proper, relevant, or true for one individual may not be for another. They also increase their knowledge base, gain more experience with the world and with interacting with others, become more flexible, and hone skills such as planning, prioritizing, strategizing, time management, self-control, and emotional regulation. Table 11.5 lists some cognitive skills and how they develop during early adulthood. Several types of cognitive skills improve or peak at this life stage.

Cognitive Skill	What Happens in Early Adulthood	Example of Relevant Tasks
Fluid intelligence	Peaks in our 20s	A psychology student can interpret statistical information to understand a journal article.
Crystallized intelligence	Increases until our 40s, when it peaks	An artist can use her knowledge of different sculpture materials to determine the best one to use.
Working memory	Improves during our 20s and peaks around age 30	A nurse can calculate drug dosages in his head.
Inhibitory control	Peaks in our 20s	A salesclerk can inhibit their impulse to argue with an unhappy customer.
Vocabulary	Increases until late adulthood	A therapy client can find the right words to use when expressing feelings during a session.
Speed of processing	Peaks in our 20s	A parent driving kids to school can react quickly to unexpected road hazards.

TABLE 11.5 Cognitive Skill Development in Early Adulthood

Dialectical Thinking and Reflective Thought

One form of cognitive processing refined during early adulthood is **dialectical thinking**, the ability to remain practical, flexible, and open to the multiple factors and solutions in a given situation. Where adolescents think in absolute terms, seeing something as either good or bad, adults are more likely to realize life is full of gray areas and that an event might be a "'double-edged" sword or a "blessing in disguise." For example, breaking up with a romantic partner may result in someone finding a more fulfilling relationship or being able to pursue goals they'd previously put on hold. This ability to combine two opposing points of view is at the core of dialectical thinking (Figure 11.18).

FIGURE 11.18 Though most adolescents and emerging adults can attain formal operational thinking, or the ability to think abstractly, we often need experience to do so. The saying 'practice makes progress' perfectly describes the way we hone this ability. (credit: "What's She Thinking?" by Chad Madden/Wikimedia Commons, CC0 1.0)

Solving adult problems also requires us to constantly consider many sources of information. **Reflective thought** relies on logical thought processes such as continuous, active evaluation of information and beliefs using evidence and past experiences. It allows us to continually question facts, draw inferences, and make connections between different types of information (Immordino-Yang et al., 2019). It emerges between twenty and twenty-five years of age, coinciding with brain myelination. Higher education may also stimulate and hone reflective thinking (Sherman, 2021), as students often need to relate new information to old, think through hypothetical situations, and apply their knowledge and skills to solve unfamiliar problems and issues. For example, when learning about the country of Morocco, which is located in Northern Africa near Spain, a learner may be surprised to learn of a Middle Eastern country that is so far from the core group of countries typically associated with the Middle East. In addition, the learner will need and have the ability to hypothesize how Middler Eastern culture may take on different aspects given the distance of Morocco from the Middle East, and its close proximity to Western Europe. Similarly, changes in crystallized intelligence also occur and are believed to be mediated by both an individual's life experiences and, for those pursuing a degree, the college courses they take (Hochberg & Konner, 2020).

Heuristics

Our thinking also becomes more efficient in early adulthood. **Heuristic**s are mental shortcuts that help us process information more quickly. They frequently simplify a problem or decision point and reduce the time and energy needed to come up with a solution. Because our brains are metabolically "expensive," meaning they require a lot of energy to function, being efficient when facing mental tasks makes sense. Common heuristics are the familiarity heuristic, affect heuristic, and scarcity heuristic. All have their advantages and their downsides.

The **familiarity heuristic** makes us feel more comfortable with things or people we have experience with than with those we have yet to experience or meet. Often, we will choose the most comfortable or familiar option, but then we may never know whether the novel thing or person was a better choice. For example, you may buy apples every week because apples are a familiar choice, not considering less familiar fruits like mangoes, even though you might enjoy mangoes more than apples if you tried them.

The **affect heuristic** causes us to use emotions more than other factors when making a decision. We can also consider this similar to intuition or a "gut instinct." Decisions we make using the affect heuristic aren't always

bad—for example, a person on a job interview "gets a bad feeling" about the way the employees interact with each other, declines a job offer, and later learns of a hostile environment lawsuit against that company. However, using the affect heuristic can also cause us to make impractical decisions, such as letting our emotions talk us into adopting a rescue dog even though our living arrangements aren't appropriate for a dog.

Finally, the **scarcity heuristic** causes us to believe that the rarer or less available something is, the more valuable it is. Advertisers sometimes count on the scarcity heuristic to sell products, telling us that "quantities are limited" and we should "act now." Unfortunately, this can cause us to waste money on things we don't really need.

While heuristics can help us use short-cuts to make decisions, they aren't always the best way to make a decision. An emerging adult might have ideas about what it would be like to live in a big city based on what they've seen in movies and be excited about all the activities to explore and people to meet, but not realize potential drawbacks, such as the high cost of living, traffic, pollution, and so on. Taking the time to think through a decision like moving to a new area should be done rationally and purposefully, not using a heuristic.

Problem Solving and Divergent Thinking

The use of both convergent and divergent thought to solve problems increases during early adulthood. **Convergent thought** uses a known solution to deal with a problem, whereas **divergent thought** creates a new solution. Divergent thought is closely associated with creativity because it often leads to "thinking outside the box" or creating multiple potential ways to solve a problem (Runco, 2014). Although they're different ways of thinking, convergent and divergent thought can be used together. By combining divergent thought processes with reflective thought, and by honing convergent thought processes, people can gain a deeper understanding of a situation or problem and come up with multiple solutions. A college student who wants to make more friends could use divergent thinking to brainstorm all the possible ways they could do that (e.g., joining clubs, playing intramural sports, attending tutoring sessions) and then use convergent thinking to gather more information (e.g., what available clubs there are) and narrow down options based on factors like time commitment, interests, and other characteristics (e.g., the Chemistry Club is only for chemistry majors, rushing a fraternity would be too expensive).

Social Cognition in Early Adulthood

Social cognition is an area of psychology concerned with what people are thinking within social situations. It asks what information we keep about our previous social interactions, how we use this information in future social interactions, and how we interpret the social motives of others. In this section, we'll consider several aspects of social cognition: Theory of mind, empathy, moral development, and prosocial behavior.

Theory of Mind and Empathy

Like many other cognitive skills, theory of mind appears in early childhood and continues to develop as we grow up. **Cognitive theory of mind** is the ability to draw conclusions about another person's intentions and beliefs, and **affective theory of mind** is the ability to draw conclusions about another person's feelings. In general, both types of theory of mind improve as we age (Baksh et al., 2021; Kilford & Blakemore, 2020; Velikonja et al., 2019), giving us a better ability to form connections and interact with others. Empathy also develops in early childhood and improves as we mature (Figure 11.19). As with theory of mind, we can consider both **cognitive empathy** (being able to adopt someone's point of view) and **affective empathy** (being able to vicariously experience someone's emotions). A potentially important component of empathy is our ability to recognize and process faces, including facial displays of emotion. Several studies have indicated that this ability improves from adolescence to emerging adulthood due to maturation of relevant parts of the brain (Gur & Gur, 2016; Kilford & Blakemore, 2020; Tousignant et al., 2016; Velikonja et al., 2019).

FIGURE 11.19 Showing empathy is an important interpersonal skill. (credit: "Student marching against police brutality" by Vitor Marinho/Flickr, CC BY 2.0)

Moral Reasoning and Prosocial Behavior

Another theory that touches on social cognition related to our behavior is Kohlberg's theory of moral development. Remember from earlier chapters that in Kohlberg's theory, emerging adults are more likely than teenagers and children to use postconventional reasoning, considering broader ethical principles such as justice and fairness to make moral decisions. However, Kohlberg's theory has some limitations, such as ignoring the interpersonal aspects of morality and focusing too much on objective justice instead of the needs of others (Miller et al., 2018). Kohlberg (1969) also felt that men advanced farther than in their moral development and viewed women as deficient in their moral reasoning abilities. These ideas met with criticism from, among others, Carol Gilligan, who was a research assistant of Kohlberg. She consequently developed her own ideas of moral development, arguing that women aren't deficient in their moral reasoning, but rather just reason differently than men do. Specifically, Gilligan proposed that in their moral reasoning, girls and women focus more on staying connected and the importance of interpersonal relationships (Gilligan, 1982). Another criticism of the theory is that Kohlberg's stories, such as the Heinz dilemma, were culturally biased and did not apply well to all cultures, particularly collectivistic cultures that prioritize interdependence more than independence (Jia & Krettenauer, 2017; Moheghi et al., 2020). Indeed, culture does play a role in cognitive development, as we'll discover in the next section.

Early adulthood may mean increased moral dilemmas as well as more opportunities to behave in moral ways. Lapsley and colleagues (2023) point out that the moral dilemmas of adult life are often ambiguous and solving them requires considering multiple factors, such as avoiding harm versus doing good, the long-term consequences of the decision, and whether the punishment fits the crime. This maps onto the elements of post-formal thought described earlier. Emerging adults are also faster and more flexible in their moral decision-making than adolescents are (Padilla-Walker, 2016).

Theory of mind, empathy, and moral reasoning can all affect prosocial behavior by giving us more information we can use to help others. When we can both consider other people's perspectives and identify with them, we can better meet their needs. Being able to consider multiple dimensions of complex moral situations enables us to make decisions that have a better chance of being beneficial. Additionally, in early adulthood we may

have more opportunities and more ability to engage in prosocial behavior by, for example, voting or giving a friend a ride somewhere after their car breaks down (Padilla-Walker, 2016).

LINK TO LEARNING

How empathic are you? This video gives some interesting perspective on our experience of empathy (https://openstax.org/r/104Empathy) toward people who are different from us.

Contextual and Cultural Variations in Cognition

People from different cultures approach problems differently, and they value different factors when making decisions. The way an individual forms their identity, and their cultural and societal norms and beliefs, all influence the way they process information and the development of cognitive skills in early adulthood.

Variations in Practical Thinking

In general, collectivistic cultures show a preference for a holistic style of thinking that relies on contextual information, situational attributions, low tolerance for ambiguity, and dislike of competition. Western cultures, on the other hand, tend to be more individualistic and emphasize dispositional (personality) attributions (explanations for behavior), competition, and reliance on absolute facts, with a higher tolerance for ambiguity (Grossman, 2018; Her & Haron, 2016; Rachev & Petkova, 2019). These differences appear to influence some specific aspects of cognition. For example, Rachev and Petkova discovered that Bulgarian business owners were extremely susceptible to the affect heuristic, and attributed this to a collectivistic tendency to prioritize emotional satisfaction over competition; in other words, because emotional factors are so important, they become a primary focus when making decisions (2019). A study comparing Israeli and Taiwanese children ages four to eleven found that the Israeli children demonstrated the scarcity heuristic by age seven, while the Taiwanese children never showed it. The researchers explained this difference in individualistic/collectivistic terms: When an item is viewed as scarce, members of individualistic cultures are more likely to want it because it helps them stand out, but this isn't a priority for members of individualistic cultures (Diesendruck et al., 2018). While this is child research and not adult research, it provides more support for the idea that cultural factors may influence use of specific cognitive strategies, and that this influence may start well before adulthood.

Culture may also affect views of convergent and divergent thinking as well as creativity. Specifically, collectivistic cultures may prioritize convergent thinking over divergent thinking because it focuses on finding the "right answer" and therefore reducing uncertainty (Her & Haron, 2016). Consistent with this, Paletz and colleagues note that Eastern and Western cultures tend to define creativity somewhat differently; Eastern cultures tend to define creativity in terms of appropriateness to the context of prevailing cultural norms, while Western cultures tend to define it in terms of novelty (2018). This may influence the way people generate solutions to problems. For example, a person from a Western culture may consider all possible solutions to a problem, regardless of how feasible they are, but someone from an Eastern culture may only consider solutions that are practical (Figure 11.20).

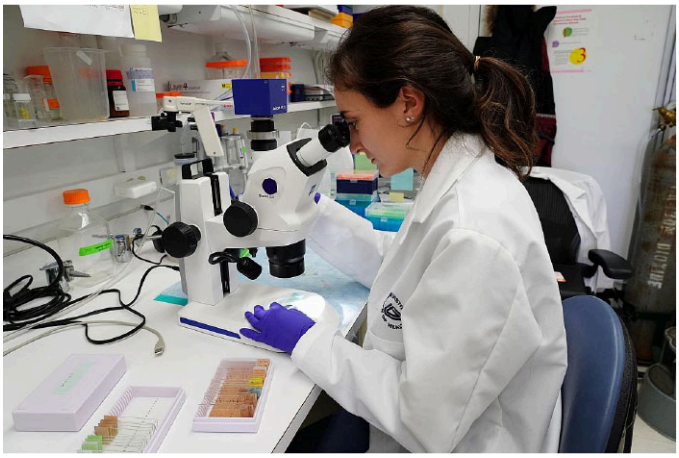


FIGURE 11.20 Divergent thinking and creativity may involve scientific exploration, not just artistic pursuits. (credit: "NIH Medical Research Scholars Program" by NIH Image Gallery/Flickr, Public Domain)

Life circumstances other than culture can also affect adult cognition. Research comparing the use of availability heuristics in Italy and Sweden has demonstrated that while residents of both countries use these heuristics, the focus varies depending on what's most salient to residents of those countries. Specifically, when asked to estimate the likelihood of flood, drought, and wildfires, the respondents rated as more likely the specific events that had occurred in their country most recently (Di Baldassarre et al., 2021). Thus, while the ability to use heuristics is universal, the information that we use to shape our judgments depends on experience.

Variations in Social Cognition

Specific cultural values may affect social cognition. For example, the value of *familism*, prevalent in Latino culture, emphasizes the importance of helping others and is related to expressed prosocial tendencies (Knight et al., 2016; 2018). A study of college students in India, Japan, and the United States found that the Japanese and American students were more likely to use **exchange norm**s (either repaying a debt or anticipating future benefit) when deciding whether to help a friend, while Indian students were more likely to use **communal norm**s (helping with no expectation of reciprocity; Miller et al., 2017). Also, a study comparing European American and Hindu Indian adults found that when evaluating the reasons why a person did something (e.g., didn't help someone in need), European American participants tended to attribute this behavior to personality characteristics (e.g., being selfish), while Hindu Indian participants tended to attribute it to contextual factors (e.g., not wanting to be late for work; Miller et al., 2018). This suggests that while the ability to consider others' inner states is common across cultures, there may be cultural differences in what people prioritize when making those judgments Figure 11.21.

FIGURE 11.21 People help each other for many reasons. (credit: "AFGE Volunteers at Mobile Food Pantry" by AFGE/Flickr, CC BY 2.0)

Contextual factors other than culture may also be relevant. For example, people who experience autism spectrum disorder have more difficulty than neurotypical people on tasks requiring theory of mind (e.g., Baksh et al., 2021; Sasson et al., 2019), although this may depend to some extent on underlying general intellectual ability (Sasson et al., 2019). Also, when asked to explain their motivation for performing prosocial acts, people with autism spectrum disorder tend to provide egocentric answers ("I'm nice") instead of answers that indicate larger understanding of social norms ("It's important to help people") (Baksh et al., 2021).

References

Baksh, R. A., Abrahams, S., Bertlich, M., Cameron, R., Jany, S., Dorrian, T., Baron-Cohen, S., Allison, C., Smith, P., MacPherson, S. E., & Auyeung, B. (2021). Social cognition in adults with autism spectrum disorders: Validation of the Edinburgh Social Cognition Test (ESCoT). *The Clinical Neuropsychologist, 35*(7), 1275–1293. https://doi.org/10.1080/13854046.2020.1737236

Brodbeck, J., Bachmann, M. S., Croudace, T. J., & Brown, A. (2013). Comparing growth trajectories of risk behaviors from late adolescence through young adulthood: An accelerated design. *Developmental Psychology, 49*(9), 1732–1738. https://doi.org/10.1037/a0030873

Cohen, A. O., Breiner, K., Steinberg, L., Bonnie, R. J., Scott, E. S., Taylor-Thompson, K., Rudolph, M. D., Chein, J., Richeson, J. A., Heller, A. S., Silverman, M. R., Dellarco, D. V., Fair, D. A., Galván, A., & Casey, B. J. (2016). When is an adolescent an adult? Assessing cognitive control in emotional and nonemotional contexts. *Psychological Science, 27*(4), 549–562. https://doi.org/10.1177/0956797615627625

Dennis, E. L., Jahanshad, N., McMahon, K. L., de Zubicaray, G. I., Martin, N. G., Hickie, I. B., Toga, A. W., Wright, M. J., & Thompson, P. M. (2013). Development of brain structural connectivity between ages 12 and 30: A 4-Tesla diffusion imaging study in 439 adolescents and adults. *NeuroImage, 64*, 671–684. https://doi.org/10.1016/j.neuroimage.2012.09.004

Di Baldassarre, G., Mondino, E., Rusca, M., Del Giudice, E., Mård, J., Ridolfi, E., Scolobig, A., & Raffetti, E. (2021). Multiple hazards and risk perceptions over time: The availability heuristic in Italy and Sweden under COVID-19. *Natural Hazards and Earth System Sciences Discussions, 24*(11), 3439–3447. https://doi.org/10.5194/nhess-21-3439-2021

Diesendruck, G., Chiang, W. C., Ferera, M., & Benozio, A. (2019). Cultural differences in the development of a preference for scarce objects. *Developmental Psychology, 55*(1), 89. https://doi.org/10.1037/dev0000620

Dvorak, A. V., Swift-LaPointe, T., Vavasour, I. M., Lee, L. E., Abel, S., Russell-Schulz, B., Graf, C., Wurl, A., Liu, H., Laule, C., Li, D. K. B., Traboulsee, A., Tam, R., Boyd, L. A., MacKay, A. L., & Kolind, S. H. (2021). An atlas for human brain myelin content throughout the adult life span. *Scientific Reports, 11*(1), 269. https://doi.org/10.1038/s41598-020-79540-3

Ferguson, H. J., Brunsdon, V. E. A., & Bradford, E. E. F. (2021). The developmental trajectories of executive function from adolescence to old age. *Scientific Reports, 11*, 1382. https://doi.org/10.1038/s41598-020-80866-1

Gilligan, C. (1982). *In a different voice: Psychological theory and women's development*. Harvard University Press.

Griffin, J., Gooding, S., Semesky, M., Farmer, B., Mannchen, G., & Sinnott, J. (2009). Four brief studies of relations between postformal thought and non-cognitive factors: Personality, concepts of God, political opinions, and social attitudes. *Journal of Adult Development, 16*(3), 173–182. https://doi.org/10.1007/s10804-009-9056-0

Grossmann, I. (2018). Dialecticism across the lifespan: Toward a deeper understanding of the ontogenetic and cultural factors influencing dialectical thinking and emotional experience. In J. Spencer-Rodgers & K. Peng (Eds.), *The psychological and cultural foundations of East Asian cognition: Contradiction, change, and holism* (pp. 135–180). Oxford University Press.

Gur, R. C., & Gur, R. E. (2016). Social cognition as an RDoC domain. *American Journal of Medical Genetics. Part B, Neuropsychiatric Genetics, 171B*(1), 132–141. https://doi.org/10.1002/ajmg.b.32394

Hartshorne, J. K., & Germine, L. T. (2015). When does cognitive functioning peak? The asynchronous rise and fall of different cognitive abilities across the life span. *Psychological Science, 26*(4), 433–443. https://doi.org/10.1177/0956797614567339

Her, E. L. W., & Haron, F. (2016). The association of giftedness, creativity, and postformal thinking in Malaysian adults. *Advanced Development, 15*, 47–62. https://www.proquest.com/scholarly-journals/association-giftedness-creativity-postformal/docview/1781544923/se-2

Hochberg, Z., & Konner, M. (2020). Emerging adulthood, a pre-adult life- history stage. *Frontiers in Endocrinology, 10*(918). https://doi.org/10.3389/fendo.2019.00918

Immordino-Yang, M. H., Darling-Hammond, L., & Krone, C. R. (2019). Nurturing nature: How brain development is inherently social and emotional, and what this means for education. *Educational Psychologist, 54*(3), 185–204. https://doi.org/10.1080/00461520.2019.1633924

Jia, F., & Krettenauer, T. (2017). Recognizing moral identity as a cultural construct. *Frontiers in Psychology, 8*, 412. https://doi.org/10.3389/fpsyg.2017.00412

Kilford, E. J., Garrett, E., & Blakemore, S. J. (2016). The development of social cognition in adolescence: An integrated perspective. *Neuroscience and Biobehavioral Reviews, 70*, 106–120. https://doi.org/10.1016/j.neubiorev.2016.08.016

Kincheloe, J. L., & Steinberg, S. R. (1993). A tentative description of post-formal thinking: The critical confrontation with cognitive theory. *Harvard Educational Review, 63*(3), 296–320. https://www.proquest.com/scholarly-journals/tentative-description-post-formal-thinking/docview/212279037/se-2

Knight, G. P., Carlo, G., Mahrer, N. E., & Davis, A. N. (2016). The socialization of culturally related values and prosocial tendencies among Mexican American Adolescents. *Child Development, 87*(6), 1758–1771. https://doi.org/10.1111/cdev.12634

Knight, G. P., Mazza, G. L., & Carlo, G. (2018). Trajectories of familism values and the prosocial tendencies of Mexican American adolescents. *Developmental Psychology, 54*(2), 378–384. https://doi.org/10.1037/dev0000436
Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of socialization theory* (pp. 347–480). Rand McNally.
Kwon, D., Pfefferbaum, A., Sullivan, E. V., & Pohl, K. M. (2020). Regional growth trajectories of cortical myelination in adolescents and young adults: Longitudinal validation and functional correlates. *Brain Imaging and Behavior, 14*(1), 242–266. https://doi.org/10.1007/s11682-018-9980-3
Lapsley, D., LaPorte, E., & Kelley, K. (2023). Moral cognition in adolescence and emerging adulthood. In L. J. Crockett, G. Carlo, & J. E. Schulenberg (Eds.), *APA handbook of adolescent and young adult development* (pp. 123–138). American Psychological Association. https://doi.org/10.1037/0000298-008
Lee, J., & Kim, H. J. (2022). Normal aging induces changes in the brain and neurodegeneration progress: Review of the structural, biochemical, metabolic, cellular, and molecular changes. *Frontiers in Aging Neuroscience, 14*, 931536. https://doi.org/10.3389/fnagi.2022.931536
Miller, J. G., Akiyama, H., & Kapadia, S. (2017). Cultural variation in communal versus exchange norms: Implications for social support. *Journal of Personality and Social Psychology, 113*(1), 81–94. https://doi.org/10.1037/pspi0000091
Miller, J. G., Wice, M., & Goyal, N. (2018). Contributions and challenges of cultural research on the development of social cognition. *Developmental Review, 50*(Part A), 65–76. https://doi.org/10.1016/j.dr.2018.03.003
Mills, K. L., Siegmund, K. D., Tamnes, C. K., Ferschmann, L., Wierenga, L. M., Bos, M. G. N., Luna, B., Li, C., & Herting, M. M. (2021). Inter-individual variability in structural brain development from late childhood to young adulthood. *NeuroImage, 242*, 118450. https://doi.org/10.1016/j.neuroimage.2021.118450
Moheghi, M., Ghorbanzadeh, M., & Abedi, J. (2020). The investigation and criticism moral development ideas of Kohlberg, Piaget and Gilligan. *International Journal of Multicultural and Multireligious Understanding, 7*(2), 362–374. http://dx.doi.org/10.18415/ijmmu.v7i2.1516
Padilla-Walker, L. M. (2016). Moral development during emerging adulthood. In J. J. Arnett (Ed.), *The Oxford handbook of emerging adulthood* (pp. 449–463). Oxford University Press.
Paletz, S. B. F., Bogue, K., Miron-Spektor, E., & Spencer-Rodgers, J. (2018). Dialectical thinking and creativity from many perspectives: Contradiction and tension. In J. Spencer-Rodgers & K. Peng (Eds.), *The psychological and cultural foundations of East Asian cognition: Contradiction, change, and holism* (pp. 267–308). Oxford University Press.
Parr, A. C., Calabro, F., Tervo-Clemmens, B., Larsen, B., Foran, W., & Luna, B. (2022). Contributions of dopamine-related basal ganglia neurophysiology to the developmental effects of incentives on inhibitory control. *Developmental Cognitive Neuroscience, 54*, 101100. https://doi.org/10.1016/j.dcn.2022.101100
Rachev, N. R., & Petkova, M. (2019). How prone are Bulgarians to heuristics and biases? Implications for studying rationality across cultures. *Journal of Cognition and Culture, 19*(3–4), 322–342. https://doi.org/10.1163/15685373-12340062
Runco, M. A. (2014). *Creativity theories and themes: Research, development, and practice*. Academic Press. https://doi.org/10.1016/B978-0-12-410512-6.00001-1
Sasson, N. J., Morrison, K. E., Kelsven, S., & Pinkham, A. E. (2020). Social cognition as a predictor of functional and social skills in autistic adults without intellectual disability. *Autism Research, 13*(2), 259–270. https://doi.org/10.1002/aur.2195
Schreiber, L. R. N., Grant, J. E., & Odlaug, B. L. (2012). Emotion regulation and impulsivity in young adults. *Journal of Psychiatric Research, 46*(5), 651–658. https://doi.org/10.1016/j.jpsychires.2012.02.005
Sherman, G. L. (2021). Transformative learning and well-being for emerging adults in higher education. *Journal of Transformative Education, 19*(1), 29–49. https://doi.org/10.1177/1541344620935623
Simpson, A. R. (2018). *Brain changes*. Young Adult Development Project. https://hr.mit.edu/static/worklife/youngadult/brain.html
Sinnott, J. D. (1998). What characterizes postformal thought? In *The development of logic in adulthood* (pp. 23–49). Springer. https://doi.org/10.1007/978-1-4757-2911-5_3
Stebbins, R. C., Yang, Y. C., Reason, M., Aiello, A. E., Belsky, D. W., Harris, K. M., & Plassman, B. L. (2022). Occupational cognitive stimulation, socioeconomic status, and cognitive functioning in young adulthood. *SSM-Population Health, 17*, 101024. https://doi.org/10.1016/j.ssmph.2022.101024
Taber-Thomas, B., & Pérez-Edgar, K. (2015). Emerging adulthood brain development. In J. J. Arnett (Ed.), *The Oxford handbook of emerging adulthood* (pp. 126–141). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199795574.013.15
Tousignant, B., Sirois, K., Achim, A. M., Massicotte, E., & Jackson, P. L. (2017). A comprehensive assessment of social cognition from adolescence to adulthood. *Cognitive Development, 43*, 214–223. https://doi.org/10.1016/j.cogdev.2017.05.001
U.S. Department of Transportation, Bureau of Transportation Statistics (2023). *Transportation statistics annual report 2023*. https://doi.org/10.21949/1529944
Velikonja, T., Fett, A. K., & Velthorst, E. (2019). Patterns of nonsocial and social cognitive functioning in adults with autism spectrum disorder: A systematic review and meta-analysis. *JAMA Psychiatry, 76*(2), 135–151. https://doi.org/10.1001/jamapsychiatry.2018.3645
Whitley, E., Deary, I. J., Ritchie, S. J., Batty, G. D., Kumari, M., & Benzeval, M. (2016). Variations in cognitive abilities across the life course: Cross-sectional evidence from Understanding Society: The UK Household Longitudinal Study. *Intelligence, 59*, 39–50. https://doi.org/10.1016/j.intell.2016.07.001
Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., & Kuo, A. (2017). Emerging adulthood as a critical stage in the life course. In N. Halfon, C. B. Forrest, Lerner, R. M., & E. M. Faustman (Eds.), *Handbook of life course health development* (pp. 123–143). Springer. https://library.oapen.org/bitstream/handle/20.500.12657/27798/1/1002207.pdf#page=138

11.5 Contexts: Higher Education and Work Achievement in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the challenges and opportunities facing young adults in preparing for work and career
- Describe formal and informal educational opportunities in early adulthood
- Explain the considerations surrounding workforce entry for the developing young adult

Moira has been attending a community college part-time for the past few years while working as a server in her uncle's restaurant. She enjoys her work (especially as it keeps her connected to her family), but she doesn't want to work there forever. When she thinks about transferring to a four-year school, however, she feels overwhelmed by the cost—especially when she isn't sure what she "wants to be when she grows up." She likes the ocean and loves marine mammals (especially dolphins and whales), but she doesn't enjoy science courses. She also enjoys photography. She took photos of her next-door neighbor's family, and they turned out so well that she has been asked to photograph other families. However, she doesn't know if she'll be able to support herself long-term by turning this hobby into a job. She wonders if she could intern with the local newspaper to get some journalistic photography experience.

One of the most profound tasks facing young adults is preparing for life after high school. Education in childhood and adolescence is focused on learning basic skills and gaining knowledge helpful to becoming an independently functioning adult. Now people must decide what they may want to do next and how to achieve those goals. High school guidance counselors sometimes use the idea of "the **4 E's**" to describe actions students can take after graduating high school. They are *enlisting* in the military, *enrolling* in a college or vocational program, becoming *employed*, and/or taking a gap year to *explore* possibilities (Figure 11.22). In

this section, we'll examine two of the most common actions in that list: employment and enrollment in higher education.

FIGURE 11.22 Becoming an adult often means choosing a pathway to take in life, at least for now. (credit: "two roads between trees" by Jens Lelie/Wikimedia Commons, CC0 1.0)

Work and Career Preparation

There's no one single way to decide what you want to do for work or a career. We all take different paths to find our way to that destination, sometimes through a series of different pathways. Some of us know our interests from an early age, while others aren't sure even after starting college or embarking on a first job. And many people decide to change their careers as they move through adulthood, as well. We should also note that additional groups of people may not pursue paid employment because they take on responsibilities such as raising children or caring for elderly relatives. Adulthood allows us to make these choices, many times changing pathways throughout the course of a person's lifespan.

The choice of work or career as a person enters early adulthood oftentimes depends to a great extent on an individual's identity and life circumstances, especially their skills, values, beliefs, and goals. Someone who aspires to a specific lifestyle might choose their career based on expected salary. For some people, the chance to travel, help others, or apply a specific skill like language proficiency or musical talent might be their main goal. Thus, career choices often depend on the person's having done some self-exploration and developing a sense of identity and purpose. The process of self-exploration may also include actively investigating jobs of interest by discussing the jobs with those in the field, volunteering, interning, doing internet searches, and taking college courses or completing a vocational program or certification course.

Life circumstances may also affect work choices. As we learned at the beginning of this chapter, having a low SES may prevent a person from exploring personally fulfilling career options and instead focus on meeting immediate needs like paying for food and shelter. Larger societal factors such as the nation's economy and the availability of jobs in one's community may also affect a person's options. Having children may necessitate getting a job to provide for them or prevent a person from getting a job if the cost of childcare is too prohibitive. Overall childcare costs are hard to quantify because these figures depend on area population, the age of the child, and whether the care is provided in home or in a center. However, recent U.S. Census data indicate that

families in the United States can spend from 8 percent to 19 percent of their income on childcare, an annual cost of between $5,357 and $17,171 in 2022 dollars (Grundy, 2024). For some people, it may make more financial sense to not pursue a career if paying for childcare would significantly cut into their earnings.

Having the opportunity to receive education beyond high school may also affect career and job decisions. While certain careers require more than a high school diploma or GED, an individual's career path may not need to include a two- or four-year college degree, or and may not need to include higher education at all. In the section that follows, we'll cover not only a "traditional" college education (i.e., one that leads to a bachelor's degree) but also possible alternatives, such as vocational training and apprenticeships.

College as Context in Early Adulthood

Many jobs now require some form of degree or certification beyond high school, a change that has had a profound influence in making emerging adulthood a distinct developmental stage in many countries. According to U.S. Census data (Figure 11.23), while only 24 percent of people completed high school in 1940, that number rose to 41 percent in 1960, then 55 percent by 1970 (U.S. Census Bureau, 1970). According to the latest Census data, 91 percent of people in 2021 reported that they had completed their high school degree or high school equivalent degree (GED) (U.S. Census Bureau, 2022). People completing advanced degrees such as a masters or doctorate increased from 10.9 percent to 14.4 percent in the years from 2011 to 2021 (U.S. Census Bureau, 2022).

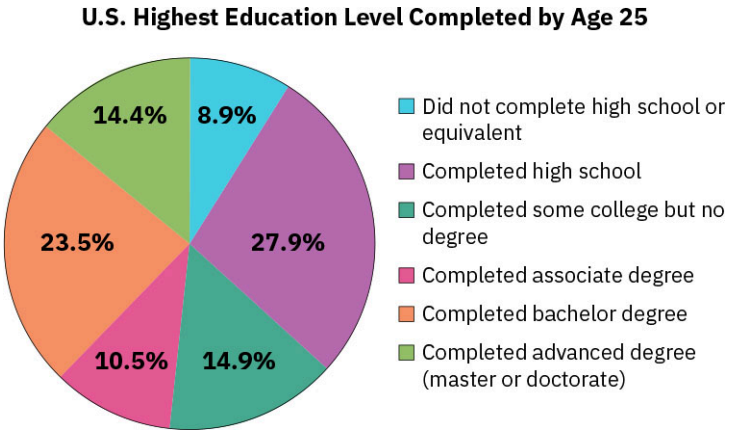


FIGURE 11.23 This chart shows the 2021 percentages of people's educational attainment by age twenty-five in the United States. Note that over 37 percent of respondents earned a bachelor's degree or higher. (data source: U.S. Census Bureau, 2022; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In the Fall 2021 semester, approximately 18,580,000 people were enrolled in college in the United States (U.S. Department of Education, 2023a). Similar data from Canada indicate that approximately 1,440,000 people were enrolled in college there in the Fall 2023 semester (Universities Canada, 2023). These figures represent only people currently enrolled, not people who've completed a college education. It should be noted that data for both countries include international students who aren't considered official residents of country where they attend school. This makes it somewhat challenging to determine the proportion of the population these figures represent, but ballpark estimates suggest that these figures represent roughly 5.6 percent of the United States population and 3.7 percent of the Canadian population.

Of the roughly two million bachelor's degrees earned in in the United States during the 2021–2022 academic year, the top six most common majors were business (18.6 percent), health professions (13.1 percent), social sciences and history (7.5 percent), biology/biomedical sciences (6.5 percent), psychology (6.4 percent), and engineering (6.1 percent; U.S. Department of Education, 2023b). Perhaps not surprisingly, many of these popular majors have obvious ties to potentially rewarding career fields. Careers in fields such as health care and psychology may be intrinsically rewarding and lead to greater job satisfaction and personal fulfillment. College education is also frequently touted as a pathway to higher salaries, greater career flexibility, and more

opportunities for advancement (Blagg, 2022; Chau et al., 2023; Klor de Alva, 2022; OECD, 2023; Rosenbaum et al., 2017; Warick & Melnick, 2022). In fact, one study of finance majors found that 85 percent of the sample expected a salary at the 70th percentile or higher within ten years of graduation, despite the statistical unlikelihood of this actually happening (Schnusenberg, 2020).

Looking at specific demographic variables and their relationship to educational attainment, we see some interesting patterns. In terms of gender, similar numbers of men and women have a high school diploma as their highest degree earned (29.4 percent versus 26.5 percent respectively; U.S. Census Bureau, 2022). However, the gap is a bit larger when it comes to higher education. By age twenty-five, 46.9 percent of men had completed at least a bachelor's degree, compared to 53.1 percent of women (U.S. Census Bureau, 2022).

The picture is somewhat different when we look at race and ethnicity. Recent data indicate that Asian youth had the highest number of baccalaureate degree holders at 61 percent, followed by young adults who were White at 41.9 percent, Black (28.1 percent), and Hispanic (20.6 percent; U.S. Census Bureau, 2022). These discrepancies are likely due to factors such as economic disadvantage, language barriers, and lack of appropriate guidance regarding college education. Some of these factors may intersect with other characteristics. For example, Black and Hispanic youth are proportionately more likely than White and Asian youth to be first-generation college students, a group also more likely to have a lower median income as well as higher risk of dropping out of college (RTI International, 2019). However, the number of Black and Hispanic adults earning higher education degrees is rising. Between 2011 and 2021, the number of Black people with a college degree by the age of twenty-five, increased from 19.9 percent to 28.1 percent, and the percentage of Hispanic youths with a degree increased from 14.1 percent to 20.6 percent (U.S. Census Bureau, 2022)(Figure 11.24).

INTERSECTIONS AND CONTEXTS

Disparities in Race, Ethnicity, and Gender in STEM Fields

Research suggests there are differences in types of jobs (professional, service-oriented, STEM) and in the wages earned by people of different racial or ethnic groups. For example, people who are Hispanic, especially Hispanic women, have a higher chance of having jobs that offer lower than average wages, and White people are more likely than Black people to have better job security (Earle et al., 2014).

STEM fields (science, technology, engineering, and math) are one area with large discrepancies in ethnic, racial, and gender representation. According to Fry et al. (2021), many minorities are underrepresented within STEM fields, especially Hispanic (17 percent of STEM jobs) and Black (9 percent of STEM jobs). Employment within STEM fields often requires a college degree and as of 2018, Black and Hispanic individuals represented 7 percent and 12 percent respectively of bachelor's degrees within STEM fields, with White and Asian students earning the majority of STEM degrees (Fry et al., 2021).

Though women represented just over half the STEM degrees earned in 2018, they're still underrepresented in some areas. Most degrees women earned within STEM fields were in fields related to health care (85 percent), as opposed to degrees in engineering (22 percent) and even computer science (19 percent). Though women do represent a little over half of all STEM-related degrees, Hispanic and Black women are underrepresented, together comprising only 17 percent of the STEM workforce (Fry et al., 2021).

These discrepancies persist after these graduates get to the workplace. Not only are Black and Hispanic workers underrepresented in STEM fields, but they also often get paid less than White and Asian counterparts. Race and ethnicity also intersect with sex; Black and Hispanic women receive the lowest wages within STEM fields (Fry et al., 2021). There are groups attempting to erase these discrepancies within STEM fields by providing resources such as peer mentoring, financial support for student research activities, and summer bridge programs for rising college freshmen (Estrada et al., 2016); however, increasing inclusion in these fields and college majors is

complex, as many minorities do not have access to resources, especially educational resources, helpful to increasing representation in STEM fields. STEM is not always incorporated into early education programs, which may also decrease exposure to these fields for young children.

Here are links to the National Science Foundation Initiative to increase participation in STEM fields (https://openstax.org/r/104NSFStem) and a list of organizations that are working to increase diversity within STEM fields (https://openstax.org/r/104StemDiverse) from National University.

LINK TO LEARNING

The United States Department of Education "College Scorecard" website (https://openstax.org/r/104CollegeScore) contains a search tool that allows prospective students to find information about different schools, programs of study, and degree options. It also contains a section titled "Alternative Pathways to a Career" that provides links to information about apprenticeships and training programs.

FIGURE 11.24 College provides many opportunities for learning both in and out of the classroom. (credit: "Multicultural Mashup Melds Languages, Cultures at COD 58" by COD Newsroom/Flickr, CC BY 2.0)

Earning a bachelor's degree has other benefits besides potentially increased income and career satisfaction. A fundamental purpose of college is to help people gain and refine cognitive abilities including verbal skills, quantitative skills, and critical thinking skills. While these skills can also develop outside of a college education, college provides a setting in which all three of them are regularly used, with desirable consequences for successful performance. These skills are transferrable to nearly every area of life, as are the "soft" skills that emerging adults can also hone in college, including planning, organizing, taking initiative, managing time, leading, and persuading. While interacting with classmates and working cooperatively on group projects, college students also develop social skills such as interpersonal communication, perspective-taking, and conflict resolution. Having a college degree is associated with improved decision-making about issues such as online safety and with prosocial civic engagement activities such as voting and volunteer work (OECD, 2023). College can also provide an excellent opportunity for finding purpose during emerging adulthood. Self-exploration at college can help people settle on their adult values and belief systems, further shape their identity, and develop complex, long-lasting relationships both platonic and romantic.

Along those lines, it's not unusual for students to try out different majors before following through on the education or training required to attain a job within their field of choice. According to the U.S. Department of Education, around 30 percent of students enrolled in a two- or four-year degree program change their major before graduating, and at least 10 percent change their major multiple times (Leu, 2017). This is developmentally appropriate in the context of emerging adulthood and identity formation, discussed at the

beginning of the chapter. Also, as we'll see, college is not the only route to a career.

COVID and the College Experience

In Section 11.2 Physical Health and Growth in Early AdulthoodS, we examined how the COVID-19 pandemic affected mental health in emerging adulthood. Here, we will further consider how it affected the college experience. Around the world, in-person instruction shifted to online instruction on short notice, with students, faculty, staff, and families often having only a week or two to prepare. Not surprisingly, this change—combined with the circumstances that caused it—was associated with academic challenges. For many of them, they now had to share computer time and equipment with other family members, potentially limiting their ability to complete assignments or participate in synchronous online class meetings. These students were also cut off from academic resources such as tutoring as well as the social support and companionship of their friends and student organizations, which are also important components of the college experience.

Not all students entered this transition with equal challenges. For example, Birmingham and colleagues found that while college students were generally comfortable with technology, a third of them had never taken an online class prior to the pandemic (2023). Demographic factors also appeared to affect the adjustment to online learning. Students of color tend to perform lower in online classes than in face-to-face classes (Shankar et al., 2023). While financial concerns were common across demographic groups, people of color and families with low SES were more likely to experience financial challenges (Ibarra-Mejia et al., 2023; Molock & Parchem, 2022).

However, some valuable lessons may have been learned in the process. The pandemic provided the opportunity for a "natural experiment" in that students couldn't self-select into online versus in-person classes, therefore allowing us to study performance in online classes while minimizing the effects of self-selection bias. Online classes with synchronous meetings tend to have better student outcomes than ones that are entirely asynchronous. (Reference needed). Large introductory-level classes conducted face-to-face may not typically enable high-impact practices such as small group discussions and flipped classrooms, but these things can be accomplished online. Finally, to address concerns about potential cheating on online exams, instructors could move away from multiple-choice, memorization-based questions to application-based questions that require short answer or essay responses. These questions may encourage more student engagement and represent a better assessment of learning (Shankar et al., 2023).

Alternatives to a College Degree

While an associate or a bachelor's degree is a common educational pathway in emerging adulthood, it's not the only option out there. People can also choose to earn an associate's degree by attending a community college or a vocational school such as a trade school or technical institute (Figure 11.25). Less costly than a four-year college, these institutions offer one- to two-year training or licensing programs for jobs like HVAC technician, veterinary assistant, dental assistant, electrician, plumber, and pharmacy technician. Some of these schools offer two-year courses of study—similar to the general education curriculum portion of a bachelor's degree—leading to associate's degrees that may be transferrable to four-year institutions. Associate's degrees are a good alternative to a bachelor's degree for people whose career goals don't require one or who aren't completely certain about going to college. They may also be a way for someone who's earned some credits but isn't able to complete a bachelor's degree to avoid leaving higher education empty-handed (Institute for Higher Education Policy, 2017).

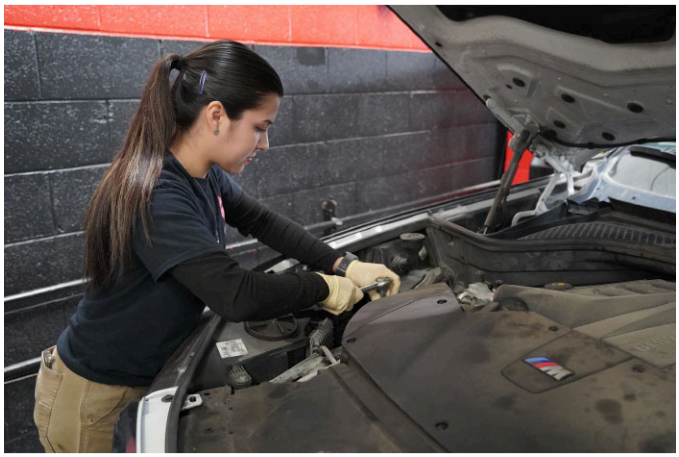


FIGURE 11.25 Community colleges and vocational schools offer training and education to prepare for a variety of careers. (credit: "female mechanic" by Mike Skoropad/Flickr, CC BY 2.0)

At vocational schools, courses are hands-on and intensive, with small classes focused on specific skills and preparation for any testing required for the job. In some countries, vocational training includes more than just blue-collar occupations. For example, an **apprenticeship** is a paid position involving a combination of on-the-job training, mentoring, and classroom learning, often leading to employment in a specific field. Apprenticeship programs often focus on skilled trades such as information technology, manufacturing, food service, or cosmetology, but not always. Germany has an apprenticeship system, offered as an alternative to college, that involves all sectors of the workforce, including **civil service job**s (government jobs that don't involve political appointments or legal work, such as urban planners, budget analysts, sanitation workers, and firefighters; Deissinger & Gonon, 2021). In Japan, high school students can enroll in specialized training schools called *senmon gakko*, designed to prepare students to meet workforce needs in such diverse areas as agriculture, health care, apparel and homemaking, and the arts (Kogirima, 2014; Taylor, 2020). Other countries regard vocational training as a possible alternative to, but not necessarily a replacement for, college. In Québec, students enroll in either a pre-university program or a vocational training program after finishing high school, and completion of either program makes them eligible to get a university education if they want one (Taylor, 2020).

In some cases, a two-year or four-year degree may not be necessary. For some positions, a short certificate training course opens the path to becoming a certified personal trainer, medical transcriptionist, court reporter, or security guard. Many service-sector jobs such as bartending and construction work may also require only supervised training and a test to become certified; for these positions, a high school degree or GED may not even be needed. There's a wide range of employment opportunities out there, with a corresponding wide range of education and training necessary (or not) for each. No one educational path or career field is objectively better than any other; each person has to find what's best for them.

Also, not all learning occurs in the context of formal education. **Informal education** is education that occurs without a set curriculum. Learning is hands-on and can include talking with and listening to others, helping organize events, and sharing experiences. Participation can help people learn about others, including those whose lives are unlike their own, and can expand their perspective-taking skills along with learning more about themselves. Thus, informal learning can be a form of **experiential learning**, a form of learning that involves not only gaining understanding by doing, but also reflecting on the experiences. It can occur in a college setting through internships and service learning courses as well as outside college through activities like volunteering and even activism (Gross & Rutland, 2017).

Costs and Rewards of College

College isn't the path for everyone, but it's still a popular choice for many young adults to explore options in life, specifically options for work. However, it comes with a literal cost that can vary greatly. According to the

United States Department of Education, in the 2021–2022 academic year, the yearly cost of tuition and fees ranged from $4,000 at two-year public colleges, to $9,700 at four-year public colleges, to an average of $38,800 at private colleges (National Center for Education Statistics, 2023). We should note that these figures for public colleges represent in-state tuition rates only; out-of-state students typically pay more, oftentimes double the costs annually. Also, these figures only represent tuition and fees; they don't include the additional costs of necessities such as textbooks and housing. These costs can vary widely depending on the program of study, geographic location, whether a college is public or private, and whether a student lives on or off campus. However, recent data indicate that college students can expect to spend between $1,000 and $1,400 per year on textbooks and materials, and between $7,000 and $13,000 per year on housing and food (Hanson, 2023).

LINK TO LEARNING

Visit this website from the U.S. government on tools for assessing the cost of college (https://openstax.org/r/104CollegeCost) to learn more.

It also takes time to earn a degree, and many young adults have to work in order to partially or fully support themselves while pursuing their degree. Thus, finding time to attend classes and study while working can be stressful. This may cause students to reduce their working hours (and thus their earnings) to make time for classes, or to take reduced class loads (and thus take longer to graduate as well as pay more overall in fees) to accommodate their job. Either approach has financial consequences. Compared to many other countries, the United States provides more financial aid in the form of loans and scholarships, but tuition costs are higher than in many other countries (Bouchikra, 2024; Hanson, 2021; also see "Intersections and Contexts" feature box). Many students in the United States take out loans to pay for college, but the loans must be paid back, which can be a heavy financial burden on someone starting out at a job. Starting salaries for many occupations are typically much lower than the average salaries posted online, and someone expecting their first post-college job to give them enough money to immediately pay off their student loans will likely be in for a nasty surprise.

INTERSECTIONS AND CONTEXTS

The Cost of College Around the World

The higher education costs we've seen so far only apply to colleges in the United States. There's a lot of variability in how countries outside the United States manage the financial aspects of higher education. While it's impossible to cover every single nation's approach to college, we can identify some overall trends.

In many European countries, such as Denmark, Norway, and Sweden, college tuition is free. Often this benefit is just for residents of that country (or, in the case of Denmark and Sweden, the European Union; Bouchikra, 2024; Hanson, 2021); students from other countries will have to pay to go to school there, but this is reasonable considering that the primary purpose of public education is to educate the citizens of that country. Having free tuition means, obviously, that higher education is more accessible and that college graduates can enjoy higher earning potential without the burden of student loans.

In the United Kingdom, tuition costs are similar to those in the United States. However, most baccalaureate degrees are three-year programs instead of the four-year programs typically offered in the United States, reducing potential costs. Also, loans don't have to be repaid until after a recipient crosses a certain income threshold depending on which payment plan they're enrolled in (Hanson, 2021; *Repaying Your Student Loan*, n.d.). By contrast, in the United States, loan repayment is expected to start as soon as the recipient is no longer in school.

South and East Asian countries vary widely in their tuition costs. For example, students at public universities in India pay only $50 per year in tuition, compared to $2,200 per year in China and approximately $8,000 in Japan

and the Republic of Korea (Bouchikra, 2024). However, the cost of living is very high in some of these countries; many Chinese students live in residence halls or even with host families because they can't afford to rent an apartment (Hanson, 2021). In contrast, cost of living and college tuition costs in many Latin American countries are lower than in many other countries (Bouchkira, 2024; Hanson, 2021), partly because of poor economic conditions in many of those countries. Recently, Chile has instituted a taxpayer-funded *gratuidad* program to provide free college tuition for citizens in its lowest income bracket. In addition to increasing access to higher education, this program also attempts to compensate for poor quality college preparation in primary and secondary schools in impoverished areas (Bouchikra, 2024; Nadworny et al., 2019).

What's the payoff of attaining a degree? There are many ways to answer that question. Financially speaking, college graduates generally earn higher salaries and have higher earning potential. In the United States, the median yearly salary of a four-year college graduate in 2022 was around $74,464, versus $52,260 for people with an associate's degree or a certificate from a vocational program. Those with only a high-school diploma earn around $44,356, and people without a high school diploma or GED earn around $35,464 (U.S. Bureau of Labor Statistics, 2023). However, the difference in earnings between levels of educational attainment isn't universal. The wage gap between people with different levels of education tends to be relatively small early in employment, but widens in middle adulthood, with amount of education and earnings being positively correlated (OECD, 2023). Earnings for any job also depend on factors other than education, such as age, gender, geographic location, and demand/availability (OECD, 2023). For example, a person with a bachelor's degree in art history may have a lot of difficulty finding work in that field if they live in a rural, low-income area. Their earnings and job prospects may not perfectly reflect the value of their degree if it doesn't happen to fit a need in the place where they live.

However, a college degree in many arts and sciences fields, such as history, biology, and music, doesn't limit what a person can actually do with that degree. Thanks to the soft skills and general knowledge they confer, college degrees may also increase an individual's ability to get jobs outside the field of their degree. For instance, a college graduate who majored in English may become a technical writer for a pharmaceutical company despite not having any background in chemistry. Having a post-high school degree conveys that a person has knowledge, communication skills, and the ability to set and complete goals, all characteristics valuable to employers regardless of that person's major (Figure 11.26).

FIGURE 11.26 College teaches a wide variety of skills that can be applied to many different careers. (credit: "Spring 2023 commencement ceremony" by Germanna Community College/Flickr, CC BY 2.0)

This value is reflected in different unemployment rates for people with different amounts of education. U.S. Bureau of Labor Statistics data from 2022 indicated that people without a high school degree had an unemployment rate of 5.5 percent, while people with a high school diploma had an unemployment rate of 4 percent. For people with a four-year college degree the rate was 2.2 percent (2023). Interestingly, the unemployment rate for people with some college but no degree is 3.5 percent, compared with just 2.7 percent for people with an associate's degree (U.S. Bureau of Labor Statistics, 2023). While these people may have completed similar numbers of college credits, and people in the "some college, no degree" group may even have completed more credits than people with associate's degrees, employers clearly don't regard these two statuses as equivalent. This provides more support for earlier statements about the utility of two-year degree programs as an alternative to a four-year degree.

Workplace as Context

In previous generations, it wasn't unusual to stay with a company for life, working their way up in responsibility or even building their own business over time. This pattern has changed dramatically due to multiple factors, including the increasing role of technology in every aspect of life. When Generation X (born between 1965 and 1981) joined the workforce, technology and a changing employment landscape no longer guaranteed working for one employer for life, and many people no longer expected to do so. These changes influenced attitudes about work as well. Instead of prioritizing loyalty to a company, many people now place more value on work they enjoy or find meaningful (Črešnar & Nedelko, 2020)—although, as mentioned earlier, life circumstances may not make this possible for everyone to achieve.

Other work-related views are likely influenced by life events and experiences. Research on younger Millennials and Generation Z (those born between 1995 and 2010) finds that many report feeling less "engaged" in their work (Pendell & Vender Helm, 2022). Putting this in context, Generation Z is the first cohort to live in a digital world, meaning they have been interacting with or using technology since birth (Benítez-Márquez et al., 2022). They express increased concern about environmental issues such as climate change and societal issues such as equal rights, and place importance on working for a company that plays a positive role in addressing these issues (Barhate & Dirani, 2022; Črešnar & Nedelko, 2020; Whitney Gibson et al., 2011). They've also witnessed global phenomena such as financial crises and a world-wide pandemic; not surprisingly, this cohort of workers also reports feeling increasingly stressed, and working for employers that offer a good work-life balance or who care about the well-being of their employees is important in choosing a job (Črešnar & Nedelko, 2020; Pendell & Vender Helm, 2022). As a result, members of Generation Z actively desire careers, but those that allow flexibility and enhance personal well-being (Črešnar & Nedelko, 2020; Whitney Gibson et al., 2011).

Though our views of work might be changing, Pew Research data on workers of all ages show that most appear happy with their job, if not so satisfied with their pay or ability to be promoted. Workers over sixty-five tended to feel most positively toward their employer and reported the least amount of stress at work, finding their work fulfilling, while younger people reported feeling more stress and less fulfillment. People with higher incomes also reported more satisfaction with their benefits, pay, and promotion opportunities than people with lower incomes (Horowitz & Parker, 2023).

What can be done for those who are unhappy at work, especially about finding a better work-life balance? It's hard to define what work-life balance means to all people. For some, it means having a job that allows them to spend enough time with family, while for others it involves being able to manage health problems while still performing their job effectively (Gragnano et al., 2020; Sirgy & Lee, 2018).

Other valued aspects of the work environment include flexibility (being able to choose whether to work from home or in the office, along with having flexible hours at work), access to childcare, and resources for enhancing physical and mental health. Research has shown that employers that emphasize or have programs that address? these things see increased productivity, morale, and physical and mental health in their workforce, along with lower employee turnover (Kalev & Dobbin, 2022).

References

Barhate, B., & Dirani, K. M. (2022). Career aspirations of generation Z: A systematic literature review. *European Journal of Training and Development, 46*(1/2), 139–157. https://doi.org/10.1108/ejtd-07-2020-0124

Benítez-Márquez, M. D., Sánchez-Teba, E. M., Bermúdez-González, G., & Núñez-Rydman, E. S. (2022). Generation Z within the workforce and in the workplace: A bibliometric analysis. *Frontiers in Psychology, 12*(1). https://doi.org/10.3389/fpsyg.2021.736820

Birmingham, W. C., Wadsworth, L., Lassetter, J. H., Graff, T. C., Lauren, E., & Hung, M. (2023). COVID-19 lockdown: Impact on college students' lives. *Journal of American College Health, 71*(3), 879–893. https://doi.org/10.1080/07448481.2021.1909041

Blagg, K. (2022). The limits and potential of program-level earnings in higher education accountability. In J. D. Delisle (Ed.), *Student outcomes and earnings in higher education policy*. American Enterprise Institute. http://files.eric.ed.gov/fulltext/ED621363.pdf

Bouchikra, I. (2024). *How much does college cost in 2024: Breakdown for the US and other countries*. Research.com. https://research.com/universities-colleges/how-much-does-college-cost

Bureau of Labor Statistics (2022). *High school graduates with no college had unemployment rate of 4.5 percent in February 2022*. U.S. Department of Labor. https://www.bls.gov/opub/ted/2022/high-school-graduates-with-no-college-had-unemployment-rate-of-4-5-percent-in-february-2022.htm

Chau, H., Bana, S. H., Bouvier, B., & Frank, M. R.. (2023). Connecting higher education to workplace activities and earnings. *PLoS ONE, 18*(3), e0282323. https://doi.org/10.1371/journal.pone.0282323

Črešnar, R., & Nedelko, Z. (2020). Understanding future leaders: How are personal values of Generations Y and Z tailored to leadership in Industry 4.0? *Sustainability, 12*(11), 4417. https://doi.org/10.3390/su12114417

Deissinger, T., & Gonon, P. (2021). The development and cultural foundations of dual apprenticeships–a comparison of Germany and Switzerland. *Journal of Vocational Education & Training, 73*(2), 197–216. https://doi.org/10.1080/13636820.2020.1863451

Earle, A., Joshi, P., Geronimo, K., & Acevedo-Garcia, D. (2014.). Job characteristics among working parents: Differences by race, ethnicity, and nativity. *Monthly Labor Review*, U.S. Bureau of Labor Statistics. https://www.bls.gov/opub/mlr/2014/article/job-characteristics-among-working-parents.htm

Estrada, M., Burnett, M., Campbell, A. G., Campbell, P. B., Denetclaw, W. F., Gutiérrez, C. G., Hurtado, S., John, G. H., Matsui, J., McGee, R., Okpodu, C. M., Robinson, T. J., Summers, M. F., Werner-Washburne, M., & Zavala, M. (2016). Improving underrepresented minority student persistence in STEM. *CBE Life Sciences Education, 15*(3), es5. https://doi.org/10.1187/cbe.16-01-0038

Fry, R., Kennedy, B., & Funk, C. (2021). *STEM jobs see uneven progress in increasing gender, racial and ethnic diversity*. Pew Research Center. https://www.pewresearch.org/science/wp-content/uploads/sites/16/2021/03/PS_2021.04.01_diversity-in-STEM_REPORT.pdf

Gragnano, A., Simbula, S., & Miglioretti, M. (2020). Work–life balance: Weighing the importance of work–family and work–health balance. *International Journal of Environmental Research and Public Health, 17*(3), 907. https://doi.org/10.3390/ijerph17030907

Gross, Z., & Rutland, S. D. (2017). Experiential learning in informal educational settings. *International Review of Education, 63*, 1–8. https://doi.org/10.1007/s11159-017-9625-6

Grundy, A. (2024). *Estimated revenue for child day care services climbed as child care options declined in 2021*. United States Census Bureau. https://www.census.gov/library/stories/2024/01/rising-child-care-cost.html

Hanson, M. (2021). *Average cost of college by country*. EducationData.org. https://educationdata.org/average-cost-of-college-by-country

Hanson, M. (2023). *Average cost of college & tuition*. EducationData.org. https://educationdata.org/average-cost-of-college

Horowitz, J., & Parker, K. (2023). *How Americans view their jobs*. Pew Research Center. https://www.pewresearch.org/social-trends/2023/03/30/how-americans-view-their-jobs/

Ibarra-Mejia, G., Lusk, M., & Umucu, E. (2023). Mental health among college students during the COVID-19 pandemic at a Hispanic-serving institution. *Health Promotion Practice, 24*(3), 455–464. https://doi.org/10.1177/15248399221092750

Institute for Higher Education Policy (IHEP), Wheatle, K., Taylor, J., Bragg, D., & Ajinkya, J. (2017). *The potential of degree reclamation: A path to reclaiming the nation's unrecognized students and degrees*. Institute for Higher Education Policy. http://files.eric.ed.gov/fulltext/ED591575.pdf

Kalev, A., & Dobbin, F. (2022, August 15). The surprising benefits of work/life support. *Harvard Business Review*. https://hbr.org/2022/09/the-surprising-benefits-of-work-life-support

Klor de Alva, J. (2022). Accounting for demographics, selectivity, and risk in postcollege earnings. In J. D. Delisle (Ed.), *Student outcomes and earnings in higher education policy*. American Enterprise Institute. http://files.eric.ed.gov/fulltext/ED621363.pdf

Kogirima, A. (2014). *Senmon gakko (professional training colleges) in Japan*. National Institute for Educational Policy Research. https://www.nier.go.jp/English/educationjapan/pdf/201403SMG.pdf

Leu, K. (2017). *Beginning college students who change their majors within 3 years of enrollment*. U.S. Department of Education. https://nces.ed.gov/pubs2018/2018434.pdf

Molock, S. D., & Parchem, B. (2022). The impact of COVID-19 on college students from communities of color. *Journal of American College Health, 70*(8), 2399–2405. https://doi.org/10.1080/07448481.2020.1865380

Nadworny, E., Marcus, J., & Gutierrez, M. (2019, November 25). *What the U.S. can learn from free college in Chile*. National Public Radio. https://www.npr.org/2019/11/25/776017867/what-the-u-s-can-learn-from-free-college-in-chile/

National Conference of State Legislatures. (2024). *Long COVID-19 and disability accommodations in the workplace*. https://documents.ncsl.org/wwwncsl/Labor/Long-COVID-Disability-Accommodations-Workplace.pdf

National Center for Education Statistics. (2023). Price of attending an undergraduate institution. *Condition of education*. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/cua

OECD. (2023). *Education at a glance 2023: OECD indicators*. Organization for Economic co-operation and development. https://doi.org/10.1787/e13bef63-en

Pendell, R., & Vander Helm, S. (2022, November 11). *Generation disconnected: Data on Gen Z in the workplace*. Gallup.com. https://www.gallup.com/workplace/404693/generation-disconnected-data-gen-workplace.aspx

Repaying your student loan. (n.d.) UK.GOV. https://www.gov.uk/repaying-your-student-loan/print

Rosenbaum, J. E., Ahearn, C. E, & Rosenbaum, J. E. (2017). *Bridging the gaps: College pathways to career success*. Russell Sage Foundation. https://eric.ed.gov/?redir=http%3a%2f%2fwww.russellsage.org%2fpublications%2fbridging-gaps-0

RTI International. (2019). *First-generation college students: Demographic characteristics and postsecondary enrollment*. NASPA. https://firstgen.naspa.org/files/dmfile/FactSheet-01.pdf

Schnusenberg, O. (2020). Overconfidence in salary expectations after graduation. *Journal of Education for Business, 95*(8), 513–518. https://doi.org/10.1080/08832323.2019.1707750

Shankar, K., Arora, P., & Binz-Scharf, M. C. (2023). Evidence on online higher education: The promise of COVID-19 pandemic data. *Management and Labour Studies, 48*(2), 242–249. https://doi.org/10.1177/0258042X211064783

Sirgy, M. J., & Lee, D.-J. (2018). Work-life balance: An integrative review. *Applied Research in Quality of Life, 13*(1), 229–254. https://doi.org/10.1007/s11482-017-9509-8

Taylor, A. (2020). *Skills system international case studies*. City-REDI (City Region Economic Development Institute), University of Birmingham, UK. https://www.birmingham.ac.uk/documents/college-social-sciences/business/research/city-redi/projects-docs/international-case-study-report-final-version.pdf

Universities Canada (2023). *Fall 2023 full-time and part-time fall enrolment at Canadian universities*. https://univcan.ca/universities/facts-and-stats/

U.S. Bureau of Labor Statistics. (2023). Education pays, 2022. *Career Outlook*.: U.S. Bureau of Labor Statistics. https://www.bls.gov/careeroutlook/2023/data-on-display/education-pays.htm

U.S. Census Bureau (1970, March). *Educational attainment: March 1970*(Current Population Reports Series P-20 #207). https://www.census.gov/content/dam/Census/library/publications/1970/demo/p20-207.pdf

U.S. Census Bureau. (2022). *Census Bureau releases new educational attainment data*. https://www.census.gov/newsroom/press-releases/2022/educational-attainment.html

U.S. Department of Education. (2023a). *Total fall enrollment in degree-granting postsecondary institutions, by attendance status, sex of student, and control of institution: Selected years, 1947 through 2031*. Digest of Education Statistics. https://nces.ed.gov/programs/digest/d23/tables/dt23_303.10.asp

U.S. Department of Education. (2023b). *Bachelor's degrees conferred by postsecondary institutions, by field of study: Selected academic years, 1970–71 through 2021–2022*. Digest of Education Statistics. https://nces.ed.gov/programs/digest/d23/tables/dt23_322.10.asp

Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating mental health of US college students during the COVID-19 pandemic: Cross-sectional survey study. *Journal of Medical Internet Research, 22*(9), e22817. https://doi.org/10.2196/22817

Warick, C., & Melnick, S. (2022). Using earnings data in college advising. In J. D. Delisle (Ed.), *Student outcomes and earnings in higher education policy*. American Enterprise Institute. http://files.eric.ed.gov/fulltext/ED621363.pdf

Whitney Gibson, J., Greenwood, R. A., & Murphy, Jr., E. F. (2011). Generational differences in the workplace: Personal values, behaviors, and popular beliefs. *Journal of Diversity Management (JDM), 4*(3), 1–8. https://doi.org/10.19030/jdm.v4i3.4959

Key Terms

abstinence not engaging in sexual activity
affect heuristic mental shortcut that causes us to use emotions more than other factors when making a decision
affective empathy being able to vicariously experience someone's emotions
affective theory of mind ability to draw conclusions about another person's feelings
apprenticeship paid position involving a combination of on-the-job training, mentoring, and classroom learning
availability heuristic mental shortcut that helps us think of memorable information quickly and use it to make decisions
barrier method type of contraception and STI prevention that prevents exchange of bodily fluids
cisgender describes an individual who has a gender identity compatible with their sex assigned at birth
civil service job government job that doesn't involve political appointments or legal work; examples include urban planners, budget analysts, sanitation workers, and firefighters
cognitive empathy being able to adopt someone's point of view
cognitive theory of mind ability to draw conclusions about another person's intentions and beliefs
communal norm helping others with no expectation of reciprocity
convergent thought using a known solution to deal with a problem
dental dam thin piece of latex of polyurethane that's placed over the vulva or anus prior to oral sex
dialectical thinking ability to remain practical, flexible, and open to the multiple factors and solutions
divergent thought creating new solutions to deal with a problem; related to creativity
emerging adulthood beginning stages of adulthood characterized by the achievement of new legal statuses as well as intense exploration of career options, beliefs, and relationships
epiphyses ends of long bones like the ones in arms and legs
exchange norms either repaying a debt or anticipating future benefit when deciding whether to help another
experiential learning education that involves "learning by doing" and reflecting on the learning experience
familiarity heuristic mental shortcut that makes us feel more comfortable with things or people we have experience with than with those we have yet to experience or meet
future orientation ability to think about and plan for what lies ahead, including predicting the consequences of one's actions
gender expression external manifestation of a person's gender identity, including the way a person dresses, uses their voice, and presents themselves to the world
heuristic mental shortcut used to process information more quickly
informal education education that occurs without a set curriculum
obesity when an individual's BMI is over 30; correlated with many health issues including high blood pressure, diabetes, and heart disease
obesity paradox observation that people with a high BMI who develop heart disease sometimes live longer and are in better health than people with a lower BMI who develop heart disease
post-formal thought stage beyond formal operations that is more flexible, complex, and capable of recognizing more than one objectively correct answer to problem
pre-exposure prophylaxis (PreP) medication taken regularly to reduce the chances of getting HIV
presbyopia difficulty seeing things close up due to changes in the lens of the eye
reflective thought logical thought processes involving continuous, active evaluation of information and beliefs using evidence and past experiences
relativism idea that cultural standards, values, and ethics are a product of the time and cultural context within which they developed, and what is proper, relevant, or true for one individual may not be for another
scarcity heuristic mental shortcut that causes us to believe that the rarer or less available something is, the more valuable it is
sexual assault nonconsensual sexual contact

sexual harassment unwanted physical or verbal attention with a sexual basis

sexually transmitted infection (STI) disease caused by certain types of viruses, bacteria, or microorganisms and spread through contact with bodily fluids such as semen and blood

spermicide substance that kills sperm cells

substance abuse use of drugs or alcohol in excess or for purposes for which they weren't intended, leading to problems in physical, social, and/or psychological functioning, often termed substance misuse or problematic substance use in order to avoid stigma of "abuse"; often related to substance use disorder (SUD)

Summary

11.1 Becoming an Adult

- Arnett's theory of emerging adulthood proposes that the time period from ages eighteen to twenty-five is a time of identity exploration, instability, self-focus, feeling in-between, and being in an age of possibilities. People in this age group are taking on roles and responsibilities of adult life, but gradually, and may not have long-term commitments to careers or relationships.
- Marcia's theory of identity development proposes there are four statuses to crystalizing one's identity, depending on a person's degree of exploration and commitment: identity diffusion (little exploration, no commitment), foreclosure (commitment without exploration), identity moratorium (exploration, but no commitment), and identity achievement (exploration with commitment).
- While emerging adulthood occurs in a variety of contexts and cultures, there may be differences in the way this transition is experienced. Factors such as SES and the degree to which exploration is encouraged or discouraged can influence whether and how individuals explore educational and career options and commit to jobs and relationships

11.2 Physical Health and Growth in Early Adulthood

- By the time most of us reach emerging adulthood, we've completed puberty, and our bodies can be considered to be fully mature.
- Various body organs, such as the muscles, endocrine system, and bone mature or reach their peak during emerging adulthood. Some declines in some of these systems start in our midtwenties, although others will remain steady until middle age.
- Problematic substance use, obesity, stress, mental health concerns, and sleep influence health during this time and may influence health later in life. Establishing good habits now is important.

11.3 Sexuality in Early Adulthood

- Sexuality is a broad concept that involves thoughts, feelings, and behaviors. It also includes our sense of our own gender, what aspects of gender we choose to express, and who if anyone we're attracted to.
- Sexual orientation and gender identity aren't identical concepts. Knowing a person's sexual orientation doesn't tell us anything about their gender identity.
- STIs and pregnancy are possible outcomes of sexual activity and can have significant effects on a person's life.
- Sexual assault and sexual harassment are unwanted elements of sexual behavior that can create distress.

11.4 Cognitive Development in Early Adulthood

- Our cognitive abilities continue to develop during adulthood in ways that allow us to solve more complex problems. Cognitive skills such as crystalized intelligence, heuristics, post-formal thought, and reflective thought allow us to use information gained from past experience, sometimes to simplify information to process it more quickly (heuristics) or to combine it with logical thought (post-formal thought) or evidence (reflective thought). Dialectical thinking occurs when we combine two opposing points of view. Divergent thought enables us to create new solutions to an issue.

- Our ability to understand and empathize with others improves during emerging adulthood. We also have more potential to perform prosocial behaviors and understand more complex moral dilemmas.
- Cultural differences such as collectivism and the definition of terms such as creativity may affect the expression of cognitive skills. Contextual variables such as a diagnosis of autism spectrum disorder may affect the degree to which a person experiences empathy and theory of mind.

11.5 Contexts: Higher Education and Work Achievement in Early Adulthood

- Deciding on a career path involves many factors, including cultural, economic, and educational resources.
- A college education can increase earning power, but getting this education is expensive and time-consuming. Other post-high school educational options, such as apprenticeships and technical college, need to be made more accessible as viable alternatives to a 4-year degree.
- Today's workers are likely to seek jobs that are personally meaningful, allow for work-life balance, and facilitate physical and mental well-being. However, life circumstances and societal factors may affect job choices.

Review Questions

1. Shariq has avoided making an appointment at the college career center and has changed his major four times in his first year. When asked whether he likes his current major, he says, "Sure, but if something better comes along, I'll switch." According to James Marcia, at which identity stage is he?
   a. identity achievement
   b. identity diffusion
   c. identity foreclosure
   d. identity moratorium

2. What has been the impact of globalization on cultural values such as collectivism and individualism?
   a. They have caused intracultural strife, as younger generations seek to maintain the values of their predecessors.
   b. It has caused many cultures to become wary of and unwelcoming of outsiders to their communities.
   c. The lines between these cultural values have become less distinct and may, in fact, be outdated.
   d. It has led to more and more legislation that governs which behaviors are unacceptable within a given culture.

3. Emerging adulthood is a developmental period that is
   a. a time where irresponsible decisions and "experience one's wild side" are regarded as normal and healthy
   b. rejected as a concept in most collectivistic countries, but is embraced in individualistic cultures
   c. bound by specific neurological changes rather than specific ages where the period begins and ends
   d. recognized in some countries as a "buffer" between adolescence and full adulthood

4. Unintentional injuries are the leading cause of death during emerging adulthood, and the majority of them are caused by
   a. overdose on recreational substances
   b. head injuries during athletic or recreational events
   c. accidental shootings
   d. automobile accidents

5. The American Heart Association recommends that adults get _____ of moderate intensity aerobic activity each week, though this should be spread out over multiple occasions.
   a. 90 minutes
   b. 4 hours

c. 150 minutes
d. 1 hour

6. Chronic sleep deprivation appears to damage brain tissue in the _____ and _____, producing problems with working memory, attention, and numerical processing.
a. thalamus and hypothalamus
b. prefrontal cortex and hippocampus
c. cerebellum and pons
d. amygdala and motor cortex

7. In a 2021 study by the Urban Institute, which group of individuals was found to have the lowest percentage of children "on track" for healthy developmental outcomes?
a. White children
b. Native American and Indigenous children
c. Hispanic children
d. Black children

8. The quality and amount of _____, a lubricant that keeps our joints healthy, starts to decline by our 30s, which can lead to join stiffness over time.
a. collagen
b. lymph
c. synovial fluid
d. cartilage

9. The ages at which people are most at risk of contracting an STI are
a. 20 to 30
b. 17 to 25
c. 16 to 22
d. 18 to 24

10. Which STI is caused by a parasite?
a. Trichomoniasis
b. Syphilis
c. Gonorrhea
d. Chlamydia

11. What is the best way to describe the process of "coming out" for people in the LGBTQ+ community?
a. It cannot happen until one feels that they will be accepted by their family of origin.
b. It involves several tasks that are often experienced sequentially.
c. It is the only way an LGBTQ+ person can find inner peace with their sexuality.
d. It typically happens after a feeling psychological pressure has built up and must be released all at once.

12. Medical conditions that occur more commonly in people with weakened immune systems are called:
a. Nosocomial infections
b. Iatrogenic conditions
c. Opportunistic infections
d. Comorbid conditions

13. Logical thought processes that rely on continuous, active evaluation of information and beliefs using

evidence and past experiences are called:
a. Social cognition
b. Reflective thought
c. Crystallized intelligence
d. Divergent thinking

14. Changes in the brain during emerging adulthood include:
a. The end of synaptic pruning, decreased myelination, and more processing of information between more adjacent brain areas
b. The beginning of synaptic pruning, decreased myelination, and more processing of information between more distant brain regions
c. The beginning of synaptic pruning, increased myelination, and more processing of information between more adjacent brain areas
d. The end of synaptic pruning, increased myelination, and more processing of information between more distant brain regions

15. The ability to draw conclusions about another person's intentions and beliefs is called:
a. Cognitive theory of mind
b. Affective theory of mind
c. Cognitive altruistic empathy
d. Affective altruistic empathy

16. Heuristics are best described as
a. Pitfalls to problem solving that cause us to get stuck using the same solution repeatedly
b. Step-by-step plans for solving problems that always lead to solutions.
c. Shortcuts that help us process information more quickly to make decisions
d. Paradoxes in thought that cannot be resolved quickly.

17. Convergent thought uses _____ to deal with a problem.
a. a known solution
b. new solutions
c. help from others
d. a solution that works for everyone

18. What are the four E's?
a. Enroll, enlist, explore, enjoy
b. Enroll, enlist, explore, employment
c. Enroll, enlist, enter, employment
d. Enroll, enlist, explore, estimate

19. In the 2021–2022 academic year, the most common major among U.S. college students was
a. Business
b. Psychology
c. Engineering
d. Biology

20. According to the U.S. Department of Education, approximately what percentage of students enrolled in a two- or four-year degree program change their major before graduating?
a. 10 percent
b. 60 percent

c. 5 percent
d. 30 percent

21. Which group of workers tends to feel most positively toward their employer and report the least amount of stress at work?
a. Workers with a bachelor's degree
b. Workers with long COVID
c. Workers over age 65
d. Workers who completed apprenticeship programs before employment

22. People with some college but no degree have an unemployment rate _____ than that of people with a bachelor's degree and _____ than that of people with an associate's degree.
a. Higher; lower
b. Lower; lower
c. Higher; higher
d. Lower; higher

Check Your Understanding Questions

23. Identify three outcomes of a lower socioeconomic status that can play a role in people's experience of emerging adulthood.

24. Contrast Arnett's and Marcia's theories of emerging adulthood.

25. What are possible reasons that using electronic devices close to bedtime is associated with poorer sleep?

26. List and discuss some of the strategies noted in the text that will help with managing the effects of stress in one's life.

27. Compare and contrast HPV, herpes, and HIV.

28. Why is it accurate to surmise that one's stated sexual orientation may not fully encapsulate the range of a person's sexual feelings?

29. Explain the concept of post-formal thought in your own words.

30. Discuss the difference in how creativity is understood between people from Eastern versus Western cultures.

31. Explain the difference between experiential learning and informal education and the connection between them.

32. Explain how low SES, being a parent, and the availability of and demand for jobs can affect a person's job choices.

Personal Application Questions

33. Reflect on your current stage of life. Do you feel that you are still exploring your identity, or have you made commitments in key areas such as career, relationships, and beliefs? Provide specific examples to illustrate where you are in your journey toward adulthood.

34. Arnett mentions the "feeling in-between" that many people experience in emerging adulthood. Can you think of a time when you felt this way? How did it impact your decisions, whether in relationships, career choices, or other aspects of life?

35. Consider the impact that your socioeconomic background and environment have had on your transition to adulthood. Do you feel that these factors have influenced your opportunities or challenges during this

phase of life? Reflect on your experiences with education, employment, or family dynamics.

36. Think of three habits or behaviors that could affect your health, whether you are currently doing them, could start doing them, or should stop doing them. Describe your participation in each and how they influence your health and well-being, whether as you navigated or are currently navigating young adulthood.

37. As you navigated or are currently navigating young adulthood, what were or are some major milestones in your physical health and growth? How have these changes influenced your daily life and responsibilities?

38. Explain what future orientation means. Reflect on your degree of future orientation or that of someone you know, regardless of your current stage in life. What evidence suggests a high or low future orientation? What factors do you think have influenced this outlook, considering your unique life experiences?

39. As you navigated or are currently navigating young adulthood, how have your ideas about sexual maturity evolved? How did factors such as your culture, family values, or media influence your understanding of sexuality as part of your personal development?

40. Think about how you, or someone you know, explored or is currently exploring sexual identity and orientation. How has this process been influenced by social support, community acceptance, or cultural attitudes? How did this exploration impact their or your self-concept and relationships?

41. Reflect on the connection between sexual health and overall well-being as you navigated or are currently navigating young adulthood. What steps have you taken, or do you plan to take, to ensure you make healthy and informed decisions about sexual activity? Consider topics like STI prevention, consent, and communication with partners.

42. As you moved through young adulthood, what have you learned or experienced regarding the risk factors and consequences of sexual harassment and assault? How can individuals and communities work to reduce these incidents and create safer environments for everyone?

43. As you navigate or have navigated early adulthood, reflect on a time when you had to solve a complex problem that required a combination of both abstract and practical thinking. How did your ability to consider multiple solutions help you solve the problem?

44. Think about a recent social interaction where you had to use theory of mind and empathy to understand someone else's perspective. How did this affect your decision-making process, and what strategies did you use to consider their emotions and beliefs?

45. How has your cultural background influenced the way you approach cognitive tasks such as problem-solving and decision-making? Reflect on an example where cultural values affected the way you viewed a situation or made a choice.

46. In what ways do you think your cognitive abilities, such as your problem-solving skills or decision-making processes, have changed as you have matured into or through early adulthood? Can you identify any specific brain or life changes that contributed to these improvements?

47. Think about a time when you had to make a significant decision regarding your education or career. What factors influenced your decision, and how did you weigh the challenges and opportunities before making your choice?

48. Reflect on any formal or informal educational experiences you've had in early adulthood. How did these experiences shape your personal and professional development? What did you learn about yourself in the process?

49. If you have entered the workforce or are preparing to do so, what have you found to be the most important considerations in your decision-making? Reflect on how factors such as job availability, work-life balance,

or financial needs influenced your approach.

50. How do you see yourself balancing personal fulfillment with financial stability in your future career choices? Reflect on any conflicts you might face between choosing a passion versus a career that offers security.

Essay Questions

51. Explain how cultural factors can shape the experience of emerging adulthood, particularly in the process of identity formation. Consider the differences between individualistic and collectivistic cultures, as well as the impact of globalization on cultural values and identity exploration. Provide examples to illustrate how culture can influence the challenges and opportunities faced during this period.

52. Discuss how socioeconomic status (SES) and cultural context influence physical health during young adulthood. Consider how factors such as access to resources, social support, and health-related beliefs may shape an individual's ability to maintain healthy habits. Reflect on the potential long-term consequences of these influences on an individual's health as they transition from early to later adulthood.

53. Sleep and stress management are two critical factors for maintaining physical and mental health during early adulthood. In your essay, discuss how sleep habits and stress management techniques during young adulthood influence long-term health outcomes. Reflect on both the immediate and lasting effects of poor sleep and chronic stress, and propose strategies for improving these areas of health as young adults transition to later adulthood.

54. As individuals move through emerging adulthood, they often explore their sexual identity and orientation. In this essay, examine how social and cultural factors, such as community acceptance, family support, and media portrayals, influence this process. Reflect on the complexities that individuals face during this stage of development, particularly when their sexual orientation or identity challenges societal norms. Consider how individuals navigate these challenges and how the acceptance or rejection they encounter shapes their overall well-being and identity formation.

55. In early adulthood, cognitive development extends beyond Piaget's formal operational stage, evolving into postformal thought. This type of thinking allows for flexibility, practicality, and an understanding that life's problems often have multiple solutions. Reflect on your own experiences during early adulthood (or the period you are currently navigating). Provide an example of when you used flexible thinking, practical problem-solving, and multiple solutions thinking. Explain how each type of thinking helped you make decisions or navigate challenges in your life.

56. Reflect on the challenges and opportunities young adults face in preparing for work and career. How do societal, economic, and personal factors influence career decisions, and how might these factors affect the success or satisfaction in the chosen career? Provide examples from your own experiences or observations.

57. Discuss the role of formal and informal educational opportunities in early adulthood. How do these learning experiences impact personal growth and career advancement? Provide specific examples of how formal education (such as college) or informal education (such as internships or volunteering) has shaped your personal or professional development.

Social and Emotional Development in Early Adulthood (Ages 18 to 29)

12

FIGURE 12.1 Emerging and early adulthood is a time of transitions to new roles and contexts. (credit: modification of work "Graduation 2018" by Urban Promise/Flickr, CC BY 2.0)

CHAPTER OUTLINE

12.1 The Development of Self in Early Adulthood
12.2 Identity Development in Context in Early Adulthood
12.3 Relationships with Friends and Family in Early Adulthood
12.4 Contexts: School and Work Settings in Early Adulthood
12.5 Finding Love, Intimacy, and Romance in Early Adulthood

WHAT DOES PSYCHOLOGY SAY? Isaac looks across the crowd at his college graduation ceremony and is filled with a mix of emotions. He waves at his mom, grandmother, and brother up in the stands. He's the first person in his family to graduate from college, which has made them all proud. But now they are worried to see him moving to the city on his own for his first job.

Isaac's best friend stands next to him as the ceremony begins. As he prepares to walk across the stage, he takes a deep breath. What awaits him on the other side he isn't certain, but he's worked hard, and with the support of his family and friends he's gotten this far. He can handle what comes next. As he takes his diploma, he exhales, determined and optimistic as he begins the next chapter of his life.

Like many new graduates, Isaac wonders:

- How will he continue to develop his sense of self when encountering new adult roles and contexts?
- What will help him choose his career direction?
- How will relationships with friends and family influence his path into adulthood?

- Will he find romance as he grows into an independent individual?

In this chapter, you will find out what the current research says about all these questions and more.

12.1 The Development of Self in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify common developmental tasks of emerging and early adulthood
- Explain the role of cultural change in the development of self during emerging and early adulthood
- Describe how personality may evolve and solidify across emerging and early adulthood

Tell me about yourself. Chad had been mulling over this question in the few days since his blind date. It's such a simple question, but he had a hard time answering it as he attempted to figure out what, exactly, this prospective partner might find interesting to know about him. Did they want to know that he considers himself friendly, introverted, trustworthy, and hardworking? Or that he's a total foodie, a D&D fan, and someone who hopes to learn to scuba dive someday? Who is he?

In this section, we focus on the development of self and personality in emerging and early adulthood. The **self** encompasses all our personal characteristics (APA, 2023.) It is the way we see ourselves, represent ourselves, and relate to others. The self is considered a broader and more complex part of our development than our personality or identity (discussed later in this chapter). We'll also examine developmental tasks and life events at this stage and the way they shape our sense of self. Finally, we'll consider the frameworks of Erikson and other theorists who explain why our sense of self changes as we move into adulthood, and how that change relates to our personality traits.

Developmental Tasks: Growing Independence and Role Change

Between the ages of eighteen and twenty-nine, U.S. adults may experience several significant life changes, such as leaving the parental home, completing school, entering the workforce, forming a committed romantic relationship, and becoming a parent. Many if not all these events require or result in increasing independence and role change that in turn contribute to the development of self. In preparation for these tasks, developmental psychologist Jeffrey Arnett (2000) suggested that "emerging adulthood" (ages eighteen to twenty-five) is characterized by a period of extensive exploration of new roles and adult commitments. Young adults place more priority on personal growth-oriented opportunities that have the potential to increase their social relationships, status, and vocational success, compared to older adults who place greater priority on their health and prosocial engagement. Regardless of age, it is how attainable we perceive our goals to be that predicts our well-being (Bühler et al., 2019). Scales and colleagues (2015) assert that successful development means more than just completing a developmental task or reaching a personal goal, but also being able to develop with a "thriving orientation," reflected by growth in a young adult's well-being and maturity as they encounter changing roles and contexts. Based on this perspective, Scales and colleagues conducted an extensive review of cross-cultural research and identified eight dimensions of well-being that reflect a "successful young adulthood: physical health, psychological and emotional well-being, life skills, ethical behavior, healthy family and social relationships, educational attainment, constructive educational and occupational engagement, civic engagement" (Scales et al., 2015) (Figure 12.2).

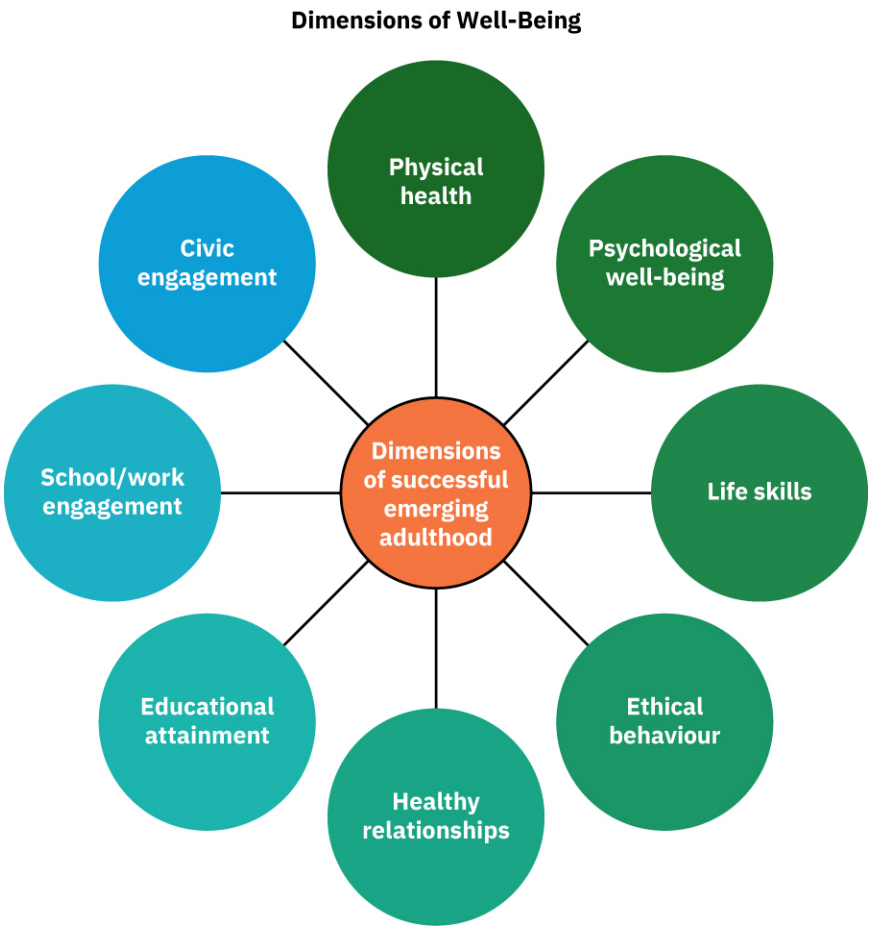


FIGURE 12.2 The stage of emerging adulthood involves developing through these eight dimensions (Scales et al., 2015). (attribution: Copyright Rice University, OpenStax, under CC BY 4.0 license)

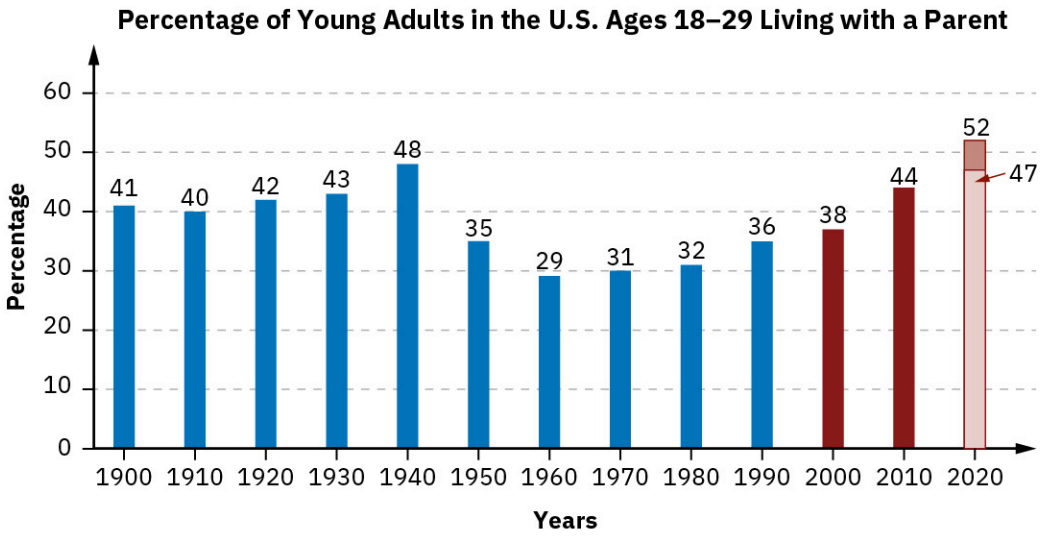
Scales and colleagues intended this list to be inclusive enough to reflect developmental success in early adulthood for a variety of people, but the way we measure or interpret each dimension is filtered through our own cultural context. For example, young adults from more traditional communities or collectivistic cultures may view the pathway to developing "healthy family relationships" as living in and contributing to their parents' household, whereas other young adults might measure it by their ability to leave the parental home and support themselves. Let's take a closer look at the way cultural changes influence our perspective of developmental success in early adulthood.

The Social Clock and the Cultural Context of Social Development

Cultural expectations about normative behavior and achievements are often associated with age and create a **social clock** by which we judge the progress of ourselves and others (Neugarten et al., 1965). Social-clock expectations do not necessarily reflect what is real or typical but instead are idealized milestones. For example, in the United States a widespread expectation is that college education should begin immediately after high school graduation and be completed within four years, by age twenty-two. In reality, fewer than half of U.S. college students complete their college education within this timeframe (U.S. Department of Education, 2019).

Social clock milestones are set by a person's culture and generation, as well as their age. Take the developmental task of leaving your parents' home. The number of young U.S. adults who live with their parents has increased somewhat over the last seventy-five years, and young men are more likely to do so than young women (Hatfield, 2023), but the percentage has peaked during times of national emergency, such as during the Great Depression (48 percent) and the start of the COVID-19 pandemic in 2020 (52 percent) (Fry et al., 2020).

(Figure 12.3).

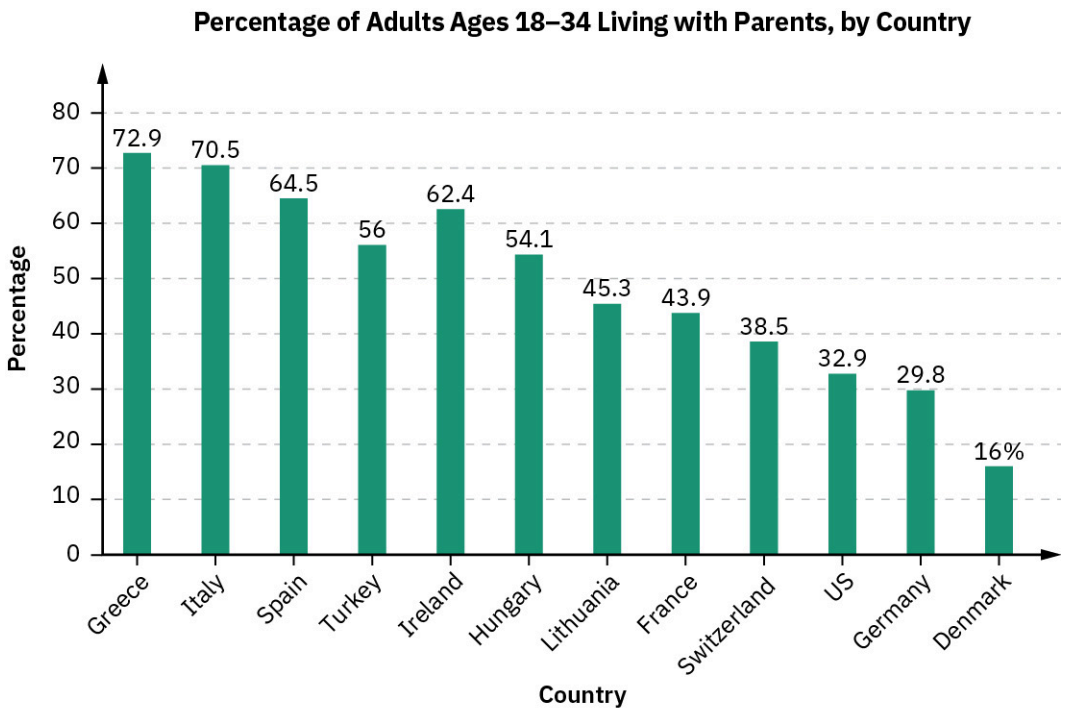


Note: Data for 1900–1990 based on decennial census. Data for 2000–2020 based on annual census averages.

Source: Fry, R., et al. (2020). A majority of young adults in the U.S. live with their parents for the first time since the Great Depression. Pew Research Center.

FIGURE 12.3 The percentage of young U.S. adults living with their parents has gradually increased over the last 125 years, peaking during national emergencies such as the Great Depression and the start of the COVID-19 pandemic. (attribution: Copyright Rice University, OpenStax, under CC BY 4.0 license)

Currently one-third of U.S. adults aged eighteen to thirty-four live with their parents. Compare that number with recent reports from the European Union, where in many countries such as Italy, Greece, and Croatia, two-thirds of young adults live at home with their parents (Figure 12.4).



Source: Hatfield, J. (2023). Young adults in the U.S. are less likely than those in most of Europe to live in their parents' home. Pew Research Center.

FIGURE 12.4 A much higher percentage of young men and women live with their parents in many European countries than in the United States. (attribution: Copyright Rice University, OpenStax, under CC BY 4.0 license)

If we measure success in young adulthood by the person's well-being in their changing roles and contexts, what happens when a young adult or others perceive them to be on or off time with their social clock? In many cultures, most developmental tasks of young adulthood are considered positive (such as graduation) (Shanahan & Busseri, 2019), and not completing them may be seen negatively.

Self-evaluation based on completion of developmental tasks in young adulthood appears to be cross-cultural. In both the culture of Turkey and the culture of Switzerland, young adults report greater life satisfaction when they achieve these goals. What differs across cultures are the developmental priorities: Life satisfaction of Turkish young adults is positively affected by on-time achievement of traditional family tasks such as marriage and parenthood, whereas Swiss young adults were more focused on individual achievements such as education and independent living (Krings et al., 2008; Pekel-Uludağlı & Akbaş, 2019). These differing priorities are echoed by interviews with diverse young adults in the United States. Those from immigrant families and ethnic and racial minorities are more likely to view the transition to adulthood as preparation for "the roles and responsibilities of interdependence," such as living within or contributing to an intergenerational family household or business, than to prioritize individuality and independence (Swartz et al., 2017, p. 280).

Overall, today's young adults appear to care about the traditional goals prescribed by their social clocks such as career and marriage, but they also pursue personal priorities like independence, maturity, and confidence. Those in the United States report that normative milestones like graduating and starting a career matter to them but are not prerequisites to adult maturity, and thus they can be flexible about when they complete them (Swartz et al., 2017). Based on hundreds of interviews around the country, Swartz and colleagues (2017) concluded that today's young adults "felt fairly comfortable with the uncertainty and ambiguity—social status-wise—of the transition to adulthood. They took it as almost natural and inevitable, nearly desiring and celebrating the lack of certainty for its flexibility, freedom, and openness" (p. 4).

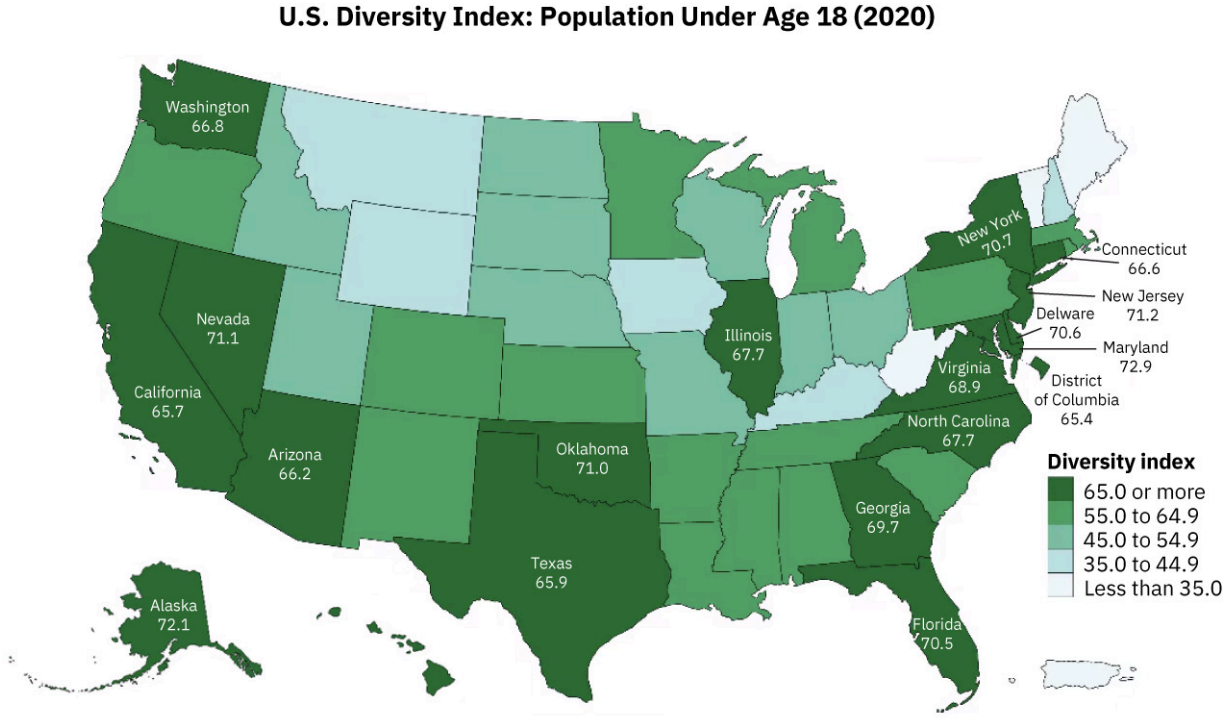
This generational shift in young adults' perspective on the social clock is likely an adaptation to the rapid pace of cultural change. In addition to staying longer in their parents' home, they are also prolonging their

education, marrying later, having children later, changing jobs more frequently, and even remaining dependent on their parent's healthcare plan longer than previous generations (Centers for Medicare and Medicaid Services, 2023; Vespa, 2017). What accounts for these changes? Young adults are responding to the changing circumstances of the world around them that have sometimes created more opportunities but also set up more potential obstacles (Swartz et al., 2017). That said, many young adults still might feel some stress or anxiety if those in their close friend or social group seem to be achieving developmental tasks before they do. Feeling "off time" from your social group—particularly if you are behind their schedule—can create some invisible pressure to adhere to the social clock.

Opportunities and Obstacles

Today's young adults can search for educational and employment opportunities, dating partners, and new homes without getting out of bed. They can learn, work, and maintain personal connections online. Access to education, information, and social connection has increased, and the methods by which young adults interact with their world have changed.

Young U.S. adults are also living in an increasingly diverse nation. According to the U.S. Census Diversity Index, in 2010 the chance that two randomly chosen individuals would be from different racial or ethnic groups was just over half, at 54.9 percent (U.S. Census Bureau, 2020) (Figure 12.5). By 2020 it was 61.6 percent, given greater diversity among younger than older age groups (Menchaca et al., 2023; U.S. Census Bureau, 2020). This growing diversity is reflected in the increasing variety of experiences in emerging adulthood, and it disrupts the assumptions of a one-size-fits-all social clock. However, sometimes a young person's possible pathways are limited by economic, social, and cultural constraints, which we must also consider when navigating the shifting cultural landscape.



Source: Menchaca et al. (2023). Examining the racial and ethnic diversity of adults and children. U.S. Census Bureau.

FIGURE 12.5 Diversity is more prevalent in younger age groups in the U.S. (credit: modification of work "Figure 2. 2020 Diversity Index: Population Under the Age of 18" by U.S. Census Bureau/United States Census Bureau, Public Domain)

Economic conditions can impede young adults' progress on developmental goals like continuing their education and living independently. Over the last forty years, the United States and other nations have

increasingly evolved into knowledge economies in which financial success depends largely on technological skill and innovation, scientific knowledge and progress, and intellectual breakthroughs (Berkes & Gaetani, 2023). The industries that accomplish these tasks rely on a more highly educated workforce. Not surprisingly, then, 74 percent of the high school class of 2023 reported they wanted to go to college (Bauer-Wolf, 2023). However, only 66 percent expect to attend, and in many states like Arizona, Idaho, and Utah, the percentage that enroll is 50 percent or lower (NCHEMS, 2018). Many cite cost as a major barrier. Even when adjusting for inflation, the average cost of attending a four-year college has increased 180 percent in the last forty years (McGurran & Hahn, 2023). Higher education isn't the only avenue to independence with financial barriers: With sky-rocketing home prices, interest rates, and utility costs, a recent report concluded that housing hasn't been so unaffordable in the United States since 1984 (Bahney, 2023).

Robbins and Wilner (2001) coined the term *quarter-life crisis* to describe feelings of helplessness, panic, indecision, and apprehension that may accompany the expectations of emerging adulthood. In a meta-analysis of research published over the last ten years, Hasyim and colleagues (2024) identified both individual and environmental factors that may influence whether a young adult experiences these feelings (Figure 12.6). Inflexibly committing to goals without space for reflection can make young people feel trapped and anxious. This anxiety can be lowered by perceived social support and spirituality. However, when young adults perceived their family or community as exerting too much influence, pressure, or judgment, it increased the likelihood of negative experiences during the early adult transition, particularly for adults from families with collectivistic cultural values.

FIGURE 12.6 The complexities of social support and social pressure can be challenging for young adults to navigate. (credit: modification of work "Varsity students hanging out" by zoey/nappy, Public Domain)

Faced with so many challenges and choices, however, young adults are particularly good at adaptive decision-making. They can efficiently review and integrate information in task-specific ways (Lindow & Lang, 2022). Perhaps that is why, contrary to the looming threat of the quarter-life crisis, reported life satisfaction typically increases for most over the course of young adulthood (Switek & Easterlin, 2018). Even when he used the term *crisis* within his own work, Erikson did not mean "impending catastrophe" but rather "a necessary turning point" (Erikson, 1968, p. 16). And consistent with the research, relationships with others are important to developmental success during that turning point in time.

LIFE HACKS

Thriving During the Quarter-Life Crisis

Looking back, young adults who have been through the "quarter-life crisis" provide the following advice (Dabis & Yates, 2014):

- Change your environment. Even a temporary change in surroundings like a visit home or a short vacation can provide space to reset and reflect.
- Practice self-awareness. Workplace psychologists call this process "taking stock" (Panchal & Jackson, 2007). Take time to review your situation. Pay attention when something doesn't feel right and consider how to leverage your strengths.
- Be decisive. Have confidence in your feelings and follow through with your decisions. Practicing self-assurance doesn't mean staying committed to bad situations, but rather following your gut. And sometimes that means changing what you are doing.
- Stay positive. Tell yourself it will be okay. Let go of your own negative thoughts, challenge the negative voices of others, and reject toxic environments.
- Practice resilience. Few things in life go as planned. Get comfortable with a little trial and error. Be prepared to "tweak" and "adapt" as you go.
- Think about your finances. While money doesn't buy happiness, it does provide stability. Spend carefully, save what you can, and think long-term.
- Find support. Friends, family, coworkers, and community members in whom you can confide and with whom you can share feelings and find acceptance are a bedrock in times of change and uncertainty.

The Role of Intimacy

Many classic theories about the development of self in early adulthood focus on the value of establishing committed and meaningful relationships with others. We begin this section with Erikson's early adult challenge of intimacy versus isolation and the perspectives of other thinkers such as psychologists George Valliant and Daniel Levinson and writer Gail Sheehy.

Theory of Psychosocial Development

Erikson's theory of psychosocial development in early adulthood is called **intimacy versus isolation**, reflecting the challenge of establishing close and trusting relationships with others. While these relationships might include romantic or sexual ones, Erikson was clear that psychological intimacy can be achieved in any relationship in which you demonstrate "the ability to fuse your identity with someone else's without the fear that you are going to lose something yourself" (Evans, 1967, p. 48), and that trusting partnerships can be found in the context of "friendship, combat, leadership, love, and inspiration" (Erikson, 1959, p. 101) (Figure 12.7).

FIGURE 12.7 Strong bonds between adults can develop in contexts that require sacrifice, commitment, and trust. (credit: modification of work "Virginia National Guard" by The National Guard/Flickr, CC BY 2.0)

Erikson asserted that intimacy, whether with a close friend, fellow soldier, or romantic partner, requires a commitment that builds trust, but also vulnerability and willingness to sacrifice and compromise. Those unwilling to experience it are likely to become psychologically and socially isolated. On the surface this developmental challenge can appear to undermine the need for increasing independence and self-sufficiency that characterizes many of the developmental tasks discussed earlier. However, research on early adulthood is clear: Social connectedness is key to a successful early adult transition. Indeed, early adulthood is associated with increasing feelings of family obligation, and those who report feeling needed and useful to their friends and family are more likely to also report receiving greater support and experiencing higher well-being during the early-adult transition (Fuligni & Pederson, 2002; Fuligni et al., 2022) (Figure 12.8).

FIGURE 12.8 Young adults who feel needed and useful to their friends and family experience higher well-being. (credit: modification of work "Baking Duo" by Disabled and Here, CC BY 4.0)

Related Theories of Early Adult Development

Based on his sixty-year longitudinal study of more than 500 men as they embarked on adulthood, psychologist George Valliant (1977, 1993, 2002) affirmed Erikson's developmental framework and the early adult challenge of intimacy versus isolation, in particular as it applied to men in the cohort Valliant studied. But Valliant added two new elements: First, he inserted a transitional stage at the end of early adulthood that he called "career

consolidation," a time to reconcile the early-adulthood tasks of intimacy and career exploration and a bridge to the generative priorities of middle adulthood.

Second, Valliant documented that adults cope with the stress and anxieties of developmental tasks by using defense mechanisms, which vary in their effectiveness and maturity. In the context of intimacy vs. isolation, Valliant identified "affiliation" as one of the most mature and healthy coping mechanisms. Affiliation allows us to reduce the anxiety of developmental tasks by confiding in others and being willing to ask for and receive their help and support in solving problems. On the other hand, Valliant described "help-rejecting complaining" as an immature defense mechanism that keeps others at a distance at the expense of healthy development. Adults employing this response to anxiety will complain about their problems and yet reject offers to help, judging the suggestions as useless or "not good enough" (Di Giuseppe & Perry, 2021).

Psychologist Daniel Levinson also saw developmental value in establishing connections with others in early adulthood. Calling the developmental stages "eras," Levinson's seasons of life theory of adult development describes a transitional period of exploration between ages seventeen and twenty-two. During this time, young adults modify their relationships with friends and family to develop the independence needed to progress into the era of early adulthood. Levinson's early adulthood era is characterized by pursuing life goals, such as leaving the parent's home, as well as starting a career and marriage. Levinson suggests that the path to achieving these goals can be facilitated by a close mentoring relationship with a role model who can guide and support the young adult's emerging independence and maturity, particularly in the workplace.

Like Valliant's theory, Levinson's theory was originally based on a longitudinal study of adult men. With his collaborator and wife Judy, however, Levinson later conducted a smaller-scale study on a cohort of career women born between 1936 and 1947, to examine the validity of his theory as applied to women. After her husband's death, Judy Levinson published the results of this work in *The Seasons of a Woman's Life* (1996). While the study found many similarities in men's and women's transitions and eras of early adulthood, it found women faced greater obstacles in reconciling education, career, and family responsibilities. They also met with greater gender discrimination in their career development, and they found it more difficult to establish effective mentoring relationships in the workplace because available mentors were usually men. As a result, many of the women studied described their husbands as their primary source of career mentoring and support, exhibiting a more direct link between the developmental tasks of intimacy and career development than their men counterparts did.

While Daniel Levinson was framing his theory of adult development in men, writer Gail Sheehy was researching the lives of men *and* women in their twenties, thirties, and forties to explore the reality of adult development in the twentieth century. In the book *Passages* (1976), based on her work, Sheehy colorfully mapped out the decades of adulthood:

- "Tryout Twenties": Ages eighteen through thirty years is a "provisional adulthood" where there is room to explore options during a "prolonged adolescence," when young people are still defined by others' expectations.
- "Turbulent Thirties": Ages thirty though forty years is the first experience of true adulthood, in which individuals take on real adult roles and responsibility and challenge the idealistic aspirations of early adulthood.
- "Flourishing Forties:" Ages forty through fifty years begins a "second adulthood," fueled by a midlife crisis during which adults take stock of the goals and achievements of their "first adulthood" and attempt to realign their priorities to confidently and optimistically pursue meaningful goals in the second half of life.

The book was wildly popular for Sheehy's engaging and relatable insights and was eventually named by the Library of Congress as one of the most influential books of its time. Twenty years later, Sheehy published the follow-up *New Passages* (1995), in which she more carefully examined the latter half of adulthood from her own perspective as an older adult. In this sequel, Sheehy noted that societal and cultural changes had created noticeable cohort differences in the developmental experience of adults from different generations, and that

earlier conceptions of the stages of adulthood were outdated. She rejected the one-size-fits-all description of adult development that she and others had earlier endorsed, instead drawing attention to the way longer lifespans create increased opportunities for modern adults to "customize our own life cycle" in a way not possible decades earlier.

Personality Traits: Evidence for Stability and Change

While the development of self in adulthood is, in part, an adaptation to the developmental tasks encountered at this stage of life, our personality is also inextricably tied to our sense of self. The five-factor model (FFM) is the most widely accepted framework psychologists use for describing individual differences in personality. With it they can measure where individuals fall on a continuum of five traits: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (OCEAN). According to the originators of this model, these traits reflect biologically based tendencies that interact with environmental influences such as culture to predict how we will respond to life changes such as the challenges of early adulthood. All this interaction culminates in our evolving sense of self.

The FFM views our individual personality traits as relatively stable predispositions more likely to drive development rather than to develop themselves (Roberts & Davis, 2016). For example, during early adulthood, a person high in extraversion might explore careers that require regularly working with large groups of people. In this example, personality is influencing the developmental task of career exploration. Exploring careers well-suited to our individual personality traits in early adulthood is advisable, especially because research shows that the level of a given individual personality trait tends to remain stable over time relative to its level in others, a phenomenon known as **rank-order stability**. That is, a person who demonstrates high levels of extraversion isn't likely to become very introverted over time. In fact, rank-order stability increases during early adulthood (Ferguson, 2010).

However, even if a person's ranking on a personality trait isn't likely to change substantially with age, that doesn't mean it cannot respond to life events with small but adaptive changes. A **mean-level change** describes the extent to which the level of a personality trait can fluctuate over the lifespan. This fluctuation may occur in response to cultural changes, historical events, and role changes. For example, the developmental tasks of emerging adulthood may explain why research finds mean level changes such as an increase in emotional stability and conscientiousness during early adulthood (Roberts & Davis, 2016). According to the **social investment theory of personality development**, as young people begin to commit to adult roles, including romantic relationships and school and work responsibilities, their personality responds with small but measurable increases in agreeableness, conscientious, and openness and decreases in neuroticism (Roberts et al., 2006, 2016; Schwaba et al., 2018, 2019; Wagner et al., 2015). They may react to the responsibilities of school and work with an increase in the goal-oriented organization found in the trait of conscientiousness. This association has been supported cross-culturally (Bleidorn et al., 2013). The increase or decrease of certain traits with age to effectively adapt to the demands of development is known as the **maturity principle of personality development**.

Young adults may also draw on stable support systems, both internal and external, to facilitate their development. Personality has a remarkable ability to both direct the trajectory of developmental tasks in early adulthood and adapt to changing roles and responsibilities. It is like a sturdy rubber band that can support our sense of self while also stretching to meet our changing needs.

LINK TO LEARNING

Where do you rank on the big five personality traits? Take this Big Five Personality Test self-assessment (https://openstax.org/r/104Big5Traits) to learn more about your level of openness, conscientiousness, extraversion, agreeableness, and neuroticism. Consider how your level of each trait might have enabled or adapted to the developmental tasks or roles relevant to your life right now.

References

American Psychological Association (2023, November 15). Self. In *APA dictionary of psychology*. Retrieved 8/12/2024, from https://dictionary.apa.org/self

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Bahney, A. (2023, August 24). *Home affordability is the worst it has been since 1984*. CNN Business. https://www.cnn.com/2023/08/24/homes/home-affordability-worst-since-1984/index.html

Bauer-Wolf, J. (2023, May 22). *About 75 percent of students want to attend college—but far fewer expect to actually go*. Higher Ed Dive. https://www.highereddive.com/news/youthtruth-college-enrollment-expectations-reality-higher-ed/650803/

Berkes, E., & Gaetani, R. (2023). Income segregation and the rise of the knowledge economy. *American Economic Journal: Applied Economics*, *15*(2): 69–102. https://doi.org/10.1257/app.20210074

Bleidorn, W., Klimstra, T. A., Denissen, J. J. A., Rentfrow, P. J., Potter, J., & Gosling, S. D. (2013). Personality maturation around the world: A cross-cultural examination of social-investment theory. *Psychological Science*, *24*(12), 2530–2540. https://doi.org/10.1177/0956797613498396

Bühler, J. L., Weidmann, R., Nikitin, J., & Grob, A. (2019). A closer look at life goals across adulthood: Applying a developmental perspective to content, dynamics, and outcomes of goal importance and goal attainability. *European Journal of Personality, 33*(3), 359–384. https://doi.org/10.1002/per.2194

Centers for Medicare and Medicaid Services. (2023). *Young adults and the Affordable Care Act: Protecting young adults and eliminating burdens on families and businesses*. U.S. Department of Health and Human Services. https://www.cms.gov/cciio/resources/files/adult_child_fact_sheet

Dabis, H., & Yates, J. (2014). Successful navigation of the stormy seas: What factors lead to a successful transition from the quarterlife crisis? *Coaching Psychologist*, *10*(1), 17–24. https://doi.org/10.53841/bpstcp.2014.10.1.17

Di Giuseppe, M., & Perry, J. C. (2021). The hierarchy of defense mechanisms: Assessing defensive functioning with the Defense Mechanisms Rating Scales Q-sort. *Frontiers in Psychology*, *12*, 718440. https://doi.org/10.3389/fpsyg.2021.718440

Erikson, E. H. (1968). *Identity: Youth and crisis*. Norton

Evans, R. I. (1967). *Dialogue with Erik Erikson*. Harper.

Ferguson, C. J. (2010). A meta-analysis of normal and disordered personality across the life span. *Journal of Personality and Social Psychology, 98*(4), 659–667. https://doi.org/10.1037/a0018770

Fry, R., Passel, J. S., & Cohn, D. (2020, September 4). *A majority of young adults in the U.S. live with their parents for the first time since the Great Depression*. Pew Research Center. https://www.pewresearch.org/short-reads/2020/09/04/a-majority-of-young-adults-in-the-u-s-live-with-their-parents-for-the-first-time-since-the-great-depression/

Fuligni, A. J., & Pedersen, S. (2002). Family obligation and the transition to young adulthood. *Developmental Psychology*, *38*(5), 856–868. https://doi.org/10.1037/0012-1649.38.5.856

Fuligni, A. J., Smola, X. A., & Al Salek, S. (2022). Feeling needed and useful during the transition to young adulthood. *Journal of Research on Adolescence, 32*(3), 1259–1266. https://doi.org/10.1111/jora.12680

Hasyim, F. F., Setyowibowo, H., & Purba, F. D. (2024). Factors contributing to quarter life crisis on early adulthood: A systematic literature review. *Psychology Research and Behavior Management*, *17*, 1–12. https://doi.org/10.2147/PRBM.S438866

Hatfield, J. (2023, May 3). *Young adults in the U.S. are less likely than those in most of Europe to live in their parents' homes*. Pew Research. https://www.pewresearch.org/short-reads/2023/05/03/in-the-u-s-and-abroad-more-young-adults-are-living-with-their-parents/

Krings, F., Bangerter, A., Gomez, V., & Grob, A. (2008). Cohort differences in personal goals and life satisfaction in young adulthood: Evidence for historical shifts in developmental tasks. *Journal of Adult Development, 15*(2), 93–105. https://doi.org/10.1007/s10804-008-9039-6

Levinson, D. J. (1996). *The seasons of a woman's life*. Ballantine.

Lindow, S., & Lang, A. (2022). A lifespan perspective on decision-making: A cross-sectional comparison of middle childhood, young adulthood, and older adulthood. *Journal of Behavioral Decision Making, 35*(3), 1–17. https://doi.org/10.1002/bdm.2268

McGurran, B., & Hahn, A. (2023, May 9). *College tuition inflation: Compare the cost of college over time*. Forbes Advisor. https://www.forbes.com/advisor/student-loans/college-tuition-inflation/

Menchaca, A., Pratt, B., Jensen, E., & Jones, N. (2023, May 22). *Examining the racial and ethnic diversity of adults and children*. U.S. Census Bureau. https://www.census.gov/newsroom/blogs/random-samplings/2023/05/racial-ethnic-diversity-adults-children.html

Neugarten, B. L., Moore, J. W., Lowe, J. C. (1965). Age norms, age constraints, and adult socialization. *American Journal of Sociology*, 70, 710–717. https://doi.org/10.1086/223965

Panchal, S., & Jackson, E. (2007). 'Turning 30' transitions: Generation Y hits quarter-life. *The Coaching Psychologist, 3*(2), 46–51. https://doi.org/10.53841/bpstcp.2007.3.2.46

Pekel-Uludağlı, N., & Akbaş, G. (2019). Young adults' perceptions of social clock and adulthood roles in the Turkish population. *Journal of Adult Development*, *26*(1), 105–115. https://doi.org/10.1007/s10804-018-9298-9

Robbins, A., & Wilner, A. (2001). *Quarterlife crisis: The unique challenges of life in your twenties*. TarcherPerigee.

Roberts, B. W., & Davis, J. P. (2016). Young adulthood is the crucible of personality development. *Emerging Adulthood*, *4*(5), 318–326. https://doi.org/10.1177/2167696816653052

Roberts B. W., Walton K., Bogg T., Caspi A. (2006). De-investment in work and non-normative personality trait change in young adulthood. *European Journal of Personality*, *20*(6), 461–474. https://doi.org/10.1002/per.607

Roberts B. W., Walton K., & Viechtbauer W. (2006). Personality changes in adulthood: Reply to Costa & McCrae (2006). *Psychological Bulletin*, *132*(1), 29–32. https://doi.org/10.1037/0033-2909.132.1.29

Scales, P. C., Benson, P. L., Oesterle, S., Hill, K. G., Hawkins, J. D., & Pashak, T. J. (2015). The dimensions of successful young adult development: A conceptual and measurement framework. *Applied Developmental Science*, *20*(3), 150–174. https://doi.org/10.1080/10888691.2015.1082429

Schwaba, T., Luhmann, M., Denissen, J. J. A., Chung, J. M., & Bleidorn, W. (2018). Openness to experience and culture-openness transactions across the lifespan. *Journal of Personality and Social Psychology, 115*(1), 118–136. https://doi.org/10.1037/pspp0000150

Schwaba, T., Robins, R. W., Grijalva, E., & Bleidorn, W. (2019). Does openness to experience matter in love and work? Domain, facet, and developmental evidence from a 24-year longitudinal study. *Journal of Personality, 87*(5), 1074–1092. https://doi.org/10.1111/jopy.12458

Shanahan, E., & Busseri, M. A. (2019). A systematic review of the relationship between perceived life script event age and valence across the life span [Supplemental material]. *Psychology and Aging*, *34*(5), 698–708. https://doi.org/10.1037/pag0000362.supp

Sheehy, G. (1976). *Passages: Predictable crises of adult life*. Ballantine Books.

Sheehy, G. (1995). *New passages: Mapping your life across time*. Random House.

Swartz, T. T., Hartmann, D., & Rumbaut, R. G. (2017). *Crossings to adulthood: How diverse young Americans understand and navigate their lives*. Brill.

Switek, M., & Easterlin, R.A. (2018). Life transitions and life satisfaction during young adulthood. *Journal of Happiness Studies, 19*, 297–314. https://doi.org/10.1007/s10902-016-9817-y

The National Center for Higher Education Management Systems. (2018). *College participation rates: College-going rates of high school graduates—directly from high school* [Data set]. NCHEMS. http://www.higheredinfo.org/dbrowser/?year=2018&level=nation&mode=data&state=&submeasure=63

U.S. Census Bureau. (2020). *Annual estimates of the resident population by sex, age, race, and Hispanic origin for the United States: April 1, 2010 to July 1, 2019* (NC-EST2019-ASR6H) [Data set]. https://www.census.gov/newsroom/press-kits/2020/population-estimates-detailed.html

U.S. Department of Education, National Center for Education Statistics. (2019). *Baccalaureate and Beyond (B&B:16/17): A First Look at the Employment and Educational Experiences of College Graduates, 1 Year Later* (NCES 2019-106; Table 2) [Data set]. https://nces.ed.gov/fastfacts/display.asp?id=569

Vaillant, G. E. (1993). *Wisdom of the ego*. Harvard University Press.

Vaillant, G. E. (2002). *Aging well: Surprising guideposts to a happier life from the landmark Harvard study*. Little, Brown Spark.

Vespa, J. (2017). *The changing economics and demographics of young adulthood: 1975–2016*. U.S. Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2017/demo/p20-579.pdf

Wagner, J., Becker, M., Lüdtke, O., & Trautwein, U. (2015). The first partnership experience and personality development: A propensity score matching study in young adulthood. *Social Psychological and Personality Science, 6*(4), 455–463. https://doi.org/10.1177/1948550614566092

12.2 Identity Development in Context in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Apply Marcia's framework to identity development in early adulthood
- Explain the concept of intersectionality as it relates to identity development
- Describe the continuing development of ethnoracial identity, gender and sexual identity, and religious identity in early adulthood

Growing up in a predominantly White community in Tennessee, Logan Eggleston had gotten used to just ignoring racist comments. She dominated as a player on both her high school basketball and volleyball teams and finished high school a year early. It wasn't until she became a college volleyball player at the University of Texas that Logan learned to embrace her identity and voice as a Black female student athlete. With the support and mentorship of her racially diverse team, Logan became the president of the student athlete advisory committee. In that role, she helped lead a student movement to have campus buildings renamed and statues replaced if they honored past racist leaders. She also worked with the University of Texas athletic department and community members to create organizations that give back to diverse and underserved communities in Austin. In 2023, Logan was named the NCAA Woman of the Year for her achievements in academics, athletics, leadership, and community service (Kumar, 2022).

Logan's experience reflects the significance that early adult transitions have on continued identity development after adolescence. Much like personality, our identity continues to evolve over time to adapt to changing roles and contexts.

Applying Marcia's Identity Framework

In much the same way that personality traits may mature in the context of the development of self, early adulthood appears to be an important time for *identity consolidation* (McLean & Syed, 2015, p. 67), a concept consistent with Marcia's developmental identity typology. Rather than use Erikson's stage of identity versus confusion, Marcia (1966) incorporated the processes Erikson described as prerequisite to identity attainment—exploration and commitment—to identify four possible statuses of identity development. These statuses (introduced in Chapter 10 Social and Emotional Development in Adolescence (Ages 12 to 18)) are moratorium, foreclosure, diffusion, and achievement.

Consistent with Erikson's theory regarding the necessity of both exploration and commitment to identity attainment, those in the identity achieved status were considered furthest along in their identity development. Those in moratorium were on the right path, whereas those who were diffused or foreclosed were considered developmentally ill-equipped for the tasks of early adulthood (Marcia, 1967).

But even for those who enter adulthood having achieved a healthy sense of identity, part of the challenge of identity is to be able to integrate the various types of identity in a way that makes sense to the person's sense of self. For example, how can someone reconcile career ambition by taking a job in a city far away from home, while also valuing ties to family? How might someone reconcile taking frequent flights while staying true to environmentalist principles? According to Marcia (2002), the developmental tasks of early adulthood, such as completing higher education, leaving the parental home or hometown, finding love, and pursuing a career, can cause a disruption to identity. Adults must therefore periodically reflect on and reformulate their values and goals to regain equilibrium and the status of identity achievement. This ongoing process of role change and reflection can create cycles in which young adults experience moratorium-achievement-moratorium-achievement as they consider how new roles, responsibilities, and contexts may redefine their existing identity (Stephen et al., 1992; McLean & Syed, 2015).

Given that the roles and contexts encountered in early adulthood may vary among individuals and even historically, it is not surprising that research attempting to track universal trajectories of identity development across early adulthood yields inconsistent results (Luyckx et al., 2013; Mannerström et al., 2017). For example,

the number of adults with diffused identity status increases during economic recessions, when efforts to complete developmental tasks such as buying a home and finding employment may be hampered by broader economic conditions (Fadjukoff et al., 2010). And while finding employment in early adulthood does not predict consistent changes to a young adult's overall identity status, becoming a parent does predict an increase in overall identity commitment. Researchers suggest that, instead of trying to generalize patterns of general identity development, analyzing why and when adults experience changes to identity process and status within specific identity domains provides a clearer and more nuanced understanding of this part of young adulthood (Mannerström et al., 2019).

Identity in Context

The value of considering the interactions of a person's identity domains is reflected in the *intersectional* approach to psychology. Civil rights advocate Kimberle Crenshaw (1991) coined the term **intersectionality** as a framework for understanding the way people simultaneously experience multiple aspects of their identity and their associated privileges or discrimination. For example, a Korean American woman's life experience is different from a Biracial American woman's, producing racial variations in the experience of womanhood.

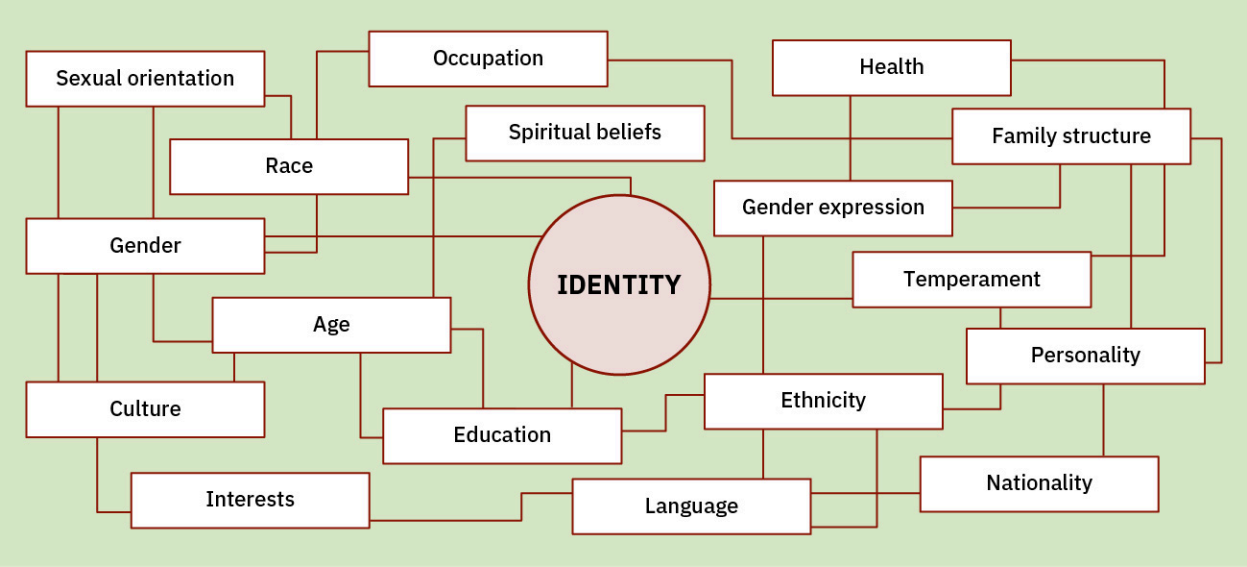


FIGURE 12.9 Identity is made up of many aspects of a person's background, experiences, traumas, and choices. Some aspects are permanent, while others change over time. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Recognizing intersectional identity especially matters when one or more of a person's identity domains are marginalized. Goffman (1963) asserts that people with stigmatized identities may feel burdened with the additional work of impression management, as they constantly try to offset negative stereotypes during their daily interactions. This attempt to manage other's expectations across changing social contexts can inhibit a person's perceived freedom of choice in their personal development and hamper their identity development (Erikson, 1968). When considered in context, identity development is just as much about who you *do* want to be (and be perceived as) as who you *do not* want to be (or be seen as) (MClean et al., 2021; Marcus & Nurius, 1986). As you read this section, consider how the domains of ethnicity and race, gender and sexuality, and religion, intersect to create varied developmental experiences for people as they begin adulthood in a variety of social contexts.

LINK TO LEARNING

Watch this TED Talk about intersectionality and its application to current events and social issues (https://openstax.org/r/104Intersection) by legal scholar Kimberle Crenshaw.

Ethnoracial Identity

As ethnic and racial diversity within the United States increase, young adults are more likely to encounter individuals different from themselves (Menchaca et al., 2023) (Figure 12.10). Aspects of the self, such as personality and identity, help us to understand and integrate these diverse social encounters into our personal narrative or life story (McAdams, 1995). An individual's ethnoracial identity is an umbrella term used to capture both racial and ethnic aspects of our identity. Personality psychologist Robert M. Sellers asserts that, within our developing life experiences, we often find opportunities for aspects of our ethnoracial identity to change. Some of these aspects are identity salience, meaning the relevance of our identity within a given situation, identity centrality, or the importance of our identity to our overall sense of self, and identity regard, which expresses how positively or negatively we feel about our identity (Quinn & Chaudoir, 2009; Sellers et al., 1998; Yip et al., 2019).

FIGURE 12.10 As ethnoracial diversity within the United States increases, young adults are more likely to encounter individuals different from themselves. (credit: modification of work "Engineering competition puts college students to the test" by U.S. Army DEVCOM/Flickr, CC BY 2.0)

Ethnoracial identity is more salient for communities of color, who are more likely than White communities to report instances of differential treatment based on their ethnoracial identity. Consequently, in emerging adulthood, those who identify with communities of color are more likely to be in the identity moratorium and identity achieved statuses regarding their ethnoracial identity than White young adults, who are less likely to have explored or achieved this aspect of their identity (Syed & Juang, 2014). Compared to middle-aged and older adults, young adults in general are less likely to have explored or achieved their ethnoracial identity; they show more transition in this identity status than older adults (Maehler, 2022).

INTERSECTIONS AND CONTEXTS

Exploring Black Girl Magic in First-Generation College Women

In 2021, *Boston Globe* columnist Jenee Osterheldt wrote: "Black women are not mythical. Nor superhuman. Our magic is in our realness, our love, and the way we rally around one another" (Osterheldt, 2021). But what happens to that magic when Black women who are first-generation college students enter predominately White college institutions?

According to researchers Qua'Asia Williams, Brittany Williams, and Lamesha Brown, the resulting experience can be one of "hyper-invisibility" in an environment where they may not have family or community connections. To make the experience of these women more visible, the researchers conducted in-depth, semi-structured interviews to learn and share their stories.

Having grown up in Black communities, many of the women described experiencing an increased salience of their Black identity, both within their predominately White educational institution and back home, which caused some to code-switch (alternate between different conversational or communication styles) as they moved back and forth between the two environments. Biology major Dontavia reports: "It's just I always have to change how I speak, so much to where I feel like I speak different, because when I go home my friends tell me I sound different. They tell me I'm talking different. To the point where it's like I've become comfortable with doing it, because I'm so used to it."

In addition to experiencing racist microaggressions, these women also intently felt the impact of their identity as first-generation college students. They recounted the risks of navigating typical college experiences, such as seeking out financial aid or internships, without the family network support that benefited many of their peers.

The researchers noted that the self-protective coping mechanisms employed by these women to combat and resist oppression requires a hypervigilance that increases their risk for anxiety and physical health problems. Williams and colleagues advocated for better campus support services to meet the needs of first-generation Black college women and concluded that, in the meantime, their persistence and resilience is "at its core, an example of Black Girl Magic" (Williams et al., 2022).

Gender and Sexual Identity

Cultural norms often blur gender identity and sexual identity, though they differ, and assume that these identities are dichotomous (meaning someone is either male or female, straight or gay). The development of gender and sexual identities is also often misunderstood as a linear process from confusion to achievement with no room to pause, question, and revisit identity as young adults encounter new roles and environments (Morgan, 2016). For many, leaving home in early adulthood prompts continued exploration of the intersection of ethnic, gender, and sexual identity. As Tai, a twenty-one-year-old transgender man, explains: "I got to college and met other trans people who were—actually had reasonably happy lives, successful lives, and from there, that kind of clicked. So I think there was early understanding, then a period of repression, and then acceptance in college" (Hereth et al., 2020).

Adults must often grapple with ways to flexibly explore their gender and sexual identity within a cultural context that assumes these aspects of ourselves are predetermined and don't warrant ongoing exploration. As a result, those who are straight are less likely to have explored this aspect of their identity than those who are LGBTQ+, because heterosexuality conforms to heteronormative cultural expectations (Morgan, 2016).

The development of gender and sexual identity can intersect with ethnoracial identity to produce a wide variety of developmental experiences (Figure 12.11). Scholars argue this intersection has not been adequately addressed in identity research, especially for those who occupy minority identities such as LGBTQ+ persons and ethnoracial minorities (Cerezo et al., 2020). Compared to past generations, modern LGBTQ+ young adults are more likely to have explored their sexual identity earlier in life and come out at a younger age, but they still may experience marginalization and discrimination as they approach social clock milestones of adulthood such as marriage and parenthood (Morgan, 2016; Russell & Fish, 2019).

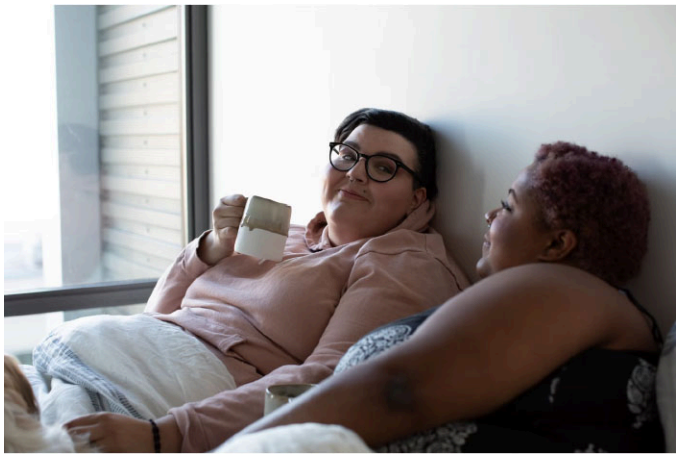


FIGURE 12.11 Identity development is particularly complex for young adults in minority or marginalized ethnoracial groups and those identifying with minority gender or sexuality identities. (credit: modification of work "two woman lying on bed" by canweallgo/Unsplash, CC0).

Black and Latine sexual minorities report achieving milestones in the development of their sexual identity, such as self-realization of same-sex attraction, earlier than White sexual minorities (Bishop et al., 2020). A 2015 study of LGBTQ+ Latina women found that family support was the most important predictor of their decision to come out to others outside their family (Pastrana, 2015). These findings were replicated in a 2020 study of Black and Latina LGBTQ+ women, who reported that worries about how their gender and sexual identity would affect their relationship with their family and their family's social standing reduced their comfort in coming out to others Cerezo et al., 2020).

Religious Identity

The most common religious affiliation in the United States is Christianity. However, the percentage of those reporting a Christian religious identity has dropped from 90 percent in the early 1970s to 63 percent in 2021. This change has been driven, in part, by adults who were raised in Christian families but no longer identify with the religion by the end of young adulthood. The number of U.S. adults raised as unaffiliated with a particular religion also increased (from 5 percent fifty years ago to 29 percent today). The percentage of adults identifying with non-Christian religions has remained relatively unchanged during this time (Pew Research Center, 2022).

So, what drives changes in religious or spiritual identity with age? During childhood and adolescence many follow the spiritual beliefs and practices of their families (Mahoney, 2021). The transition to adulthood brings new roles, social connections, and contexts that may prompt more intentional reflection on spiritual beliefs and whether they answer questions about life purpose and direction (Gale et al., 2023). When asked why they no longer identify with their family religion, many young people reported feeling out of place in a religion that did not align with their other values or priorities (Hardy & Longo, 2021). This mismatch may accompany the development of a person's worldview as they spend more time outside the parents' home and influence and encounter new people and perspectives.

While overall religiosity—level of interest, belief, and practice of worship—does not change for most people as they progress into early adulthood, young adults engage in a more explorative and information-seeking approach to their religious identity than adolescents do (Gurba et al., 2022). About 15 percent of adults experience a decline in religiosity during early adulthood, 10 percent an increase, and 10 percent an initial decline followed by a return to their religious beliefs during the early adulthood to middle adulthood transition.

References

Bishop, M. D., Fish, J. N., Hammack, P. L., & Russell, S. T. (2020). Sexual identity development milestones in three generations of sexual minority people: A national probability sample [Supplemental material]. *Developmental Psychology, 56*(11), 2177–2193. https://doi.org/10.1037/dev0001105.supp

Cerezo, A., Cummings, M., Holmes, M., & Williams, C. (2020). Identity as resistance: Identity formation at the intersection of race, gender identity, and sexual orientation. *Psychology of Women Quarterly*, *44*(1), 67–83. https://doi.org/10.1177/0361684319875977
Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, *43*(6), 1241–1299. https://doi.org/10.2307/1229039
Erikson, E. H. (1959). *Identity and the life cycle*. Norton. https://psycnet.apa.org/record/1959-15012-000
Erikson, E. H. (1968). *Identity: Youth and crisis*. Norton. https://psycnet.apa.org/record/1968-35041-000
Fadjukoff, P., Kokko, K., & Pulkkinen, L. (2010). Changing economic conditions and identity formation in adulthood. *European Psychologist, 15*(4), 293–303. https://doi.org/10.1027/1016-9040/a000061
Gale, M., Hendricks, J. J., Dollahite, D. C., & Marks, L. D. (2023). Perspectives on lifespan religious and spiritual development from scholars across the lifespan. *Religions, 14*(3), 362. https://doi.org/10.3390/rel14030362
Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Penguin Books.
Gurba, E., Czyżowska, D., Topolewska-Siedzik, E., & Ciecіuch, J. (2022). The importance of identity style for the level of religiosity in different developmental periods. *Religions, 13*(2), 157. https://doi.org/10.3390/rel13020157
Hardy, S. A., & Longo, G. S. (2021). Developmental perspectives on youth religious non-affiliation. In J. L. Heft & J. E. Stets (Eds.), *Empty churches: Non-affiliation in America* (pp. 135–171). Oxford Academic. https://doi.org/10.1093/oso/9780197529317.003.0006
Hereth, J., Pardee, D. J., & Reisner, S. L. (2020). Gender identity and sexual orientation development among young adult transgender men sexually active with cisgender men: "I had completely ignored my sexuality . . . that's for a different time to figure out." *Culture, Health & Sexuality*, *22*(1), 31–47. https://doi.org/10.1080/13691058.2019.1636290
Kumar, A. (2022, December 7). *Inside Logan Eggleston's quest for an NCAA volleyball title for Texas, an even loftier title for herself: POTUS*. ESPN College Sports. https://www.espn.com/college-sports/story/_/id/35189651/ncaa-volleyball-tournament-texas-logan-eggleston-title
Lee, B. H. J., Pearce, L. D., & Schorpp, K. M. (2018). Religious pathways from adolescence to adulthood. *Journal for the Scientific Study of Religion*, *56*(3), 678–689. https://doi.org/10.1111/jssr.12367
Luyckx, K., Klimstra, T. A., Duriez, B., Van Petegem, S., & Beyers, W. (2013). Personal identity processes from adolescence through the late 20s: Age trends, functionality, and depressive symptoms. *Social Development, 22*(4), 701–721. https://doi.org/10.1111/sode.12027
Maehler, D. B. (2022). Determinants of ethnic identity development in adulthood: A longitudinal study. *British Journal of Developmental Psychology*, *40*(1), 46–72. https://doi.org/10.1111/bjdp.12384
Mahoney, A. (2021). *The science of children's religious and spiritual development*. Cambridge University Press. http://dx.doi.org/10.1017/9781108874342
Mannerström, R., Hautamäki, A., & Leikas, S. (2017). Identity status among young adults: Validation of the Dimensions of Identity Development Scale (DIDS) in a Finnish sample. *Nordic Psychology, 69*(3), 195–213. https://doi.org/10.1080/19012276.2016.1245156
Mannerström, R., Muotka, J., & Salmela-Aro, K. (2019). Associations between identity processes and success in developmental tasks during the transition from emerging to young adulthood. *Journal of Youth Studies*, *22*(9), 1289–1307. https://doi.org/10.1080/13676261.2019.1571179
Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*(5), 551–558. https://doi.org/10.1037/h0023281
Marcia, J. E. (1967). Ego identity status: Relationship to change in self-esteem, "general maladjustment," and authoritarianism. *Journal of Personality, 35*(1), 119–133. https://doi.org/10.1111/j.1467-6494.1967.tb01419.x
Marcia, J. E. (2002). Identity and psychosocial development in adulthood. *Identity: An International Journal of Theory and Research, 2*(1), 7–28. https://doi.org/10.1207/S1532706XID0201_02
Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, *41*(9), 954–969.
McAdams, D. P. (1995). What do we know when we know a person? *Journal of Personality, 63*(3), 365–396. https://doi.org/10.1111/j.1467-6494.1995.tb00500.x
McLean, K. C. & Syed, M. (Eds.). (2015). *The oxford handbook of identity development*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199936564.001.0001
Menchaca, A., Pratt, B., Jensen, E., & Jones, N. (2023, May 22). *Examining the racial and ethnic diversity of adults and children*. U.S. Census Bureau. https://www.census.gov/newsroom/blogs/random-samplings/2023/05/racial-ethnic-diversity-adults-children.html
Morgan, E. M. (2016). Contemporary issues in sexual orientation and identity development in emerging adulthood. In J. J. Arnett (Ed.), *The Oxford handbook of emerging adulthood* (pp. 262–279). Oxford University Press. https://doi.org/10.1177/2167696812469187
Osterheldt, J. (2021, December 1). *What we mean by Black girl magic*. Boston Globe. https://www.bostonglobe.com/2021/12/01/metro/what-we-mean-by-black-girl-magic/
Pastrana A. (2015). Being out to others: The relative importance of family support, identity and religion for LGBT Latina/os. *Latino Studies, 13*, 88–112. https://doi.org/10.1057/lst.2014.69
Pew Research Center. (2022, September 13). How U.S. religious composition has changed in recent decades. https://www.pewresearch.org/religion/2022/09/13/how-u-s-religious-composition-has-changed-in-recent-decades/
Quinn, D. M., & Chaudoir, S. R. (2009). Living with a concealable stigmatized identity: The impact of anticipated stigma, centrality, salience, and cultural stigma on psychological distress and health. *Journal of Personality and Social Psychology*, *97*(4), 634–651. https://doi.org/10.1037/a0015815
Russell, S. T., & Fish, J. N. (2019). Sexual minority youth, social change, and health: A developmental collision. *Research in Human Development*, *16*(1), 5–20. https://doi.org/10.1080/15427609.2018.1537772
Sellers, R. M., Smith, M. A., Shelton, J. N., Rowley, S. A. J., & Chavous, T. M. (1998). Multidimensional model of racial identity: A reconceptualization of African American racial identity. *Personality and Social Psychology Review, 2*(1), 18–39. https://doi.org/10.1207/s15327957pspr020
Stephen, J., Fraser, E., & Marcia, J. E. (1992). Moratorium-achievement (Mama) cycles in lifespan identity development: Value orientations and reasoning systems correlates. *Journal of Adolescence, 15*(3), 283–300. https://doi.org/10.1016/0140-1971(92)90031-Y
Syed, M., & Juang, L. P. (2014). Ethnic identity, identity coherence, and psychological functioning: Testing basic assumptions of the developmental model. *Cultural Diversity & Ethnic Minority Psychology*, *20*(2), 176–190. https://doi.org/10.1037/a0035330
Williams, Q., Williams, B. M., & Brown, L. C. (2022). Exploring Black girl magic: Identity development of Black first-gen college women. *Journal of Diversity in Higher Education*, *15*(4), 466–479. https://doi.org/10.1037/dhe0000294
Yip, T., Wang, Y., Mootoo, C., & Mirpuri, S. (2019). Moderating the association between discrimination and adjustment: A meta-analysis of ethnic/racial identity. *Developmental Psychology, 55*(6), 1274–1298. https://doi.org/10.1037/dev0000708

12.3 Relationships with Friends and Family in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the role of social contexts for the developing individual in early adulthood
- Describe the role of friendships across early adulthood
- Discuss the major changes in family relations across early adulthood

When she began college ten years ago, Emily decided to stay at home and attend part-time as a commuter to save money. Now graduated with a computer science degree and working full time as a software developer, Emily is twenty-eight and still living at home. She has a supportive group of friends she can talk to about her career and personal life, and she is looking to buy a condo with the money she has saved over the last ten years with the support of her family.

Emily's story illustrates the complex interaction of our dependence on others with the early adulthood tasks associated with personal development and independence. In this section we examine more specifically some of the interpersonal relationships important to the development of young adults, including friends and family.

The Significance of Social Context

According to **self-determination theory**, our success and well-being are maximized when we balance our needs for *autonomy*, *competence*, and *relatedness* (Ryan & Deci, 2000). These aspects of developmental well-being are interrelated and can influence each other in complex ways. For example, a new job might bring financial independence, which increases your autonomy, and opportunities for professional development that increase your competence. But it might also require you to relocate or spend less time with friends and family, which decreases your relatedness. So just as we must revisit and recalibrate aspects of the self to fit the developmental tasks of early adulthood, so too must we renegotiate our relationships with friends and family in the context of our goals and emerging independence.

However, the cultural context of these relationships has changed. Today's emerging adults are more likely than in the past to experience developmental transitions unrelated to family: They are deferring marriage and children in favor of personal development goals such as obtaining higher education, starting careers, and leaving home. Evidence suggests that friends might be more influential supports than family during these transitions (Fiori et al., 2020). At the same time, a greater number of young adults today live at home with their parents or receive financial support from them. A recent poll found that 65 percent of parents have provided financial support to their young adult children within the last year, averaging $718 a month (Rawson et al., 2024).

The Role of Friends

Summarizing his review of the research on friendship development, Jeffrey Arnett concluded that "friendships change over the course of emerging adulthood, and such changes are more closely linked to life transitions (e.g., transition to college, starting a career, changing romantic status, transition to parenthood) than to age-related developmental changes. Perhaps changes in friendships also reflect changing needs in terms of support for developmental tasks" (Arnett, 2015, p. 224).

"Change" here can refer to changes in the number of friends we have, who they are, and the qualities, functions, and outcomes of our friendships. Arnett's conclusion is consistent with Selman's classic theory of friendship development (1980), which asserts that friendships in emerging adulthood evolve to **autonomous interdependence**. In this stage, friends appreciate and respect each other's individuality and identity but also rely on each other for the support needed to achieve their own goals. For example, when asked about personal goals such as academic success or physical fitness, college students indicated they would rather spend time with friends who help them to achieve those goals than friends who actually share the characteristics they hope to acquire (Aron et al., 2022; Slotter & Gardner, 2011). In other words, friendships in early adulthood progress to facilitate self-determination.

Research finds that young adult friendships can promote and create interconnections among the three elements of self-determined behavior—relatedness, autonomy, and competence (Figure 12.12). Young adults who perceive that their friends will be there to help them when they need it have higher self-esteem (Langheit & Poulin, 2024). Stronger friendship attachments in emerging adulthood are also positively associated with progress on developmental tasks, such as identity exploration, taking on responsibility for others, and becoming more independent (Schnyders et al., 2018). Self-determination also predicts positive well-being, and close and supportive friendships in early adulthood reduce feelings of loneliness and increase happiness (Demir et al., 2015; Nicolaisen & Thorsen, 2017).

FIGURE 12.12 Relatedness, autonomy, and competence are all positively affected by strong friendships in early adulthood. (credit: modification of work “A Latinx disabled woman and an Asian disabled genderfluid person chat and sit on a couch, both holding coffee mugs" by Tojo Andrianarivo/Disabled and Here, CC BY 4.0)

Friendships become deeper in early adulthood, characterized by increasing intimacy and trust, and they often provide more social support than family during times of change (Arnett, 2007; Lee & Goldstein, 2016; Miething et al., 2017; Schnyders et al., 2018). Friends confide in and seek advice from each other about their dating and sex lives, which they might not be comfortable discussing with family members (Astle et al., 2022; Carlson, 2014; Tagliabue et al., 2018). Friendship networks also expand in young adulthood (Wrzus et al., 2013). For example, many first-year college students rely more on their friends from home during their first semester, but research finds that making new friends within the new roles and settings of early adulthood increases a sense of belonging and promotes long-term well-being (Patel & Ploughman, 2024; Paul & Brier, 2001; Strayhorn, 2018).

High-quality and supportive relationships with friends during early adulthood are predictive of psychological and physical health, regardless of race or ethnicity (Szkody et al., 2021). However, the social networks of those who are White and educated include a larger number of friends than the networks of those who are Black or have less education (Ajrouch et al., 2024). People of color are more likely to have kin-friends, meaning family members such as cousins who function in friendship roles. Friendships tend to form within the settings of our daily routines such as school, work, and community, and the college experience in particular may expand the proportion of friends (compared to family) in a person’s social network (Ballard, 2019; Plummer et al., 2016). (Figure 12.13).

FIGURE 12.13 High-quality and supportive relationships with friends during early adulthood are predictive of psychological and physical health. (credit: modification of work "three women and two men standing and smiling" by canweallgo/Unsplash, CC0)

However, college students from low socioeconomic backgrounds often feel like outsiders in a college setting and are unsure how to get involved in campus activities where they might form supportive new friendships (Rubin, 2012; Peteet et al., 2015). In fact, having friends with higher perceived socioeconomic status actually increased feelings of incompetence in students of low socioeconomic status (MacInnis et al., 2019). In contrast, young adults who form close friendships with someone of a different racial or ethnic identity report that, while the depth and intimacy of these friendships took longer to build than with adults of their own identity, the resulting closeness increased their understanding of diverse perspectives. Young adults are more likely than middle-aged adults to have a close friendship with someone of a different racial or ethnic identity, and being a person of color and having a higher education increases the likelihood of having a cross-ethnic friendship (Plummer et al., 2016).

The Role of Family

The transition into adult responsibilities and independence can be challenging. In fact, since 2016, the Swedish government has offered programs to support mental health, employment, engaged citizenship, and other important needs during emerging adulthood (The European Commission, 2024). However, in the United States, families remain the primary support for the young adult transition, providing on average 10 percent of their income to their young adult children (Wightman et al., 2012). While some young adults report feeling guilty about their reliance on this financial support, most are comfortable if the assistance is framed as temporary and supporting a longer-term goal of adult independence. In this section we explore the way young adults and their families navigate this balance in their relationship as children launch into adulthood.

IT DEPENDS

How Grandparents Inform Our Lives

While grandparents' impact on the lives of younger grandchildren has been well-documented, less is known about their continuing role during the transitions of early adulthood. Abigail Stephan, a researcher in Clemson University's Institute for Engaged Aging, surveyed young adults to learn more about the quality of their relationships with their grandparents and the continued influence of those relationships on the decisions young adults make about their lives.

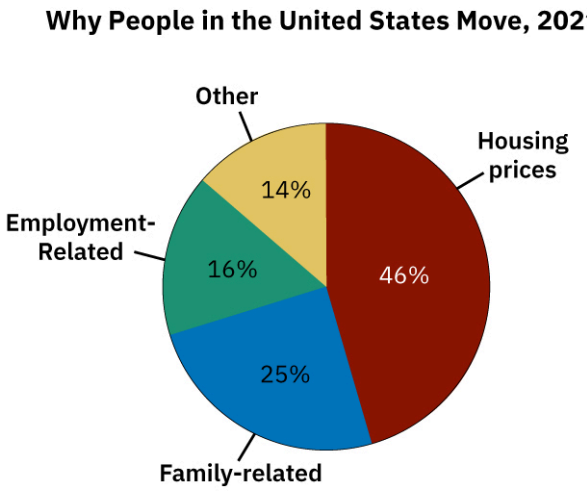
Participants often felt closer to some grandparents than to others. The past role of a grandparent as a childhood caregiver did not predict these differences. Instead, they were sometimes the result of larger family dynamics or individual personalities, but respondents also tended to feel closest to grandparents who had lived nearby during their childhood. Young adults reported that as they got older they began to "take more ownership" of those relationships, rather than relying on their parents or grandparents to manage them.

Young adults whose relationships with their grandparents were positive said they now take more initiative to stay in touch via text, phone calls, and visits, especially if they moved for jobs or college. However, for some young adults, this meant making the decision to end contentious relationships with grandparents they perceived as negatively affecting family well-being and cohesion. Still others said adulthood had given them the perspective to realize that grandparents are imperfect individuals who serve as examples of both flawed and admirable behavior and values.

Overall, Dr. Stephan concluded that, "Despite variation in the structure and substance of grandparent relationships held by participants—a level of diversity that is expected both within and across family systems—the acknowledgement of their grandparents' influence was interspersed throughout the interviews. . . All participants were conscious of the impact their grandparents have on their values and subsequent decisions regarding careers, life partners, child-rearing, and perspectives on functioning in the world" (Stephan, 2024).

Leaving Home

In the United States a person can expect to move almost twelve times during their lifetime. Adults between twenty and twenty-nine move the most, because many of the developmental tasks of young adulthood, such as job changes and the achievement of financial independence, require relocating (Mariotti, 2022) (Figure 12.14).

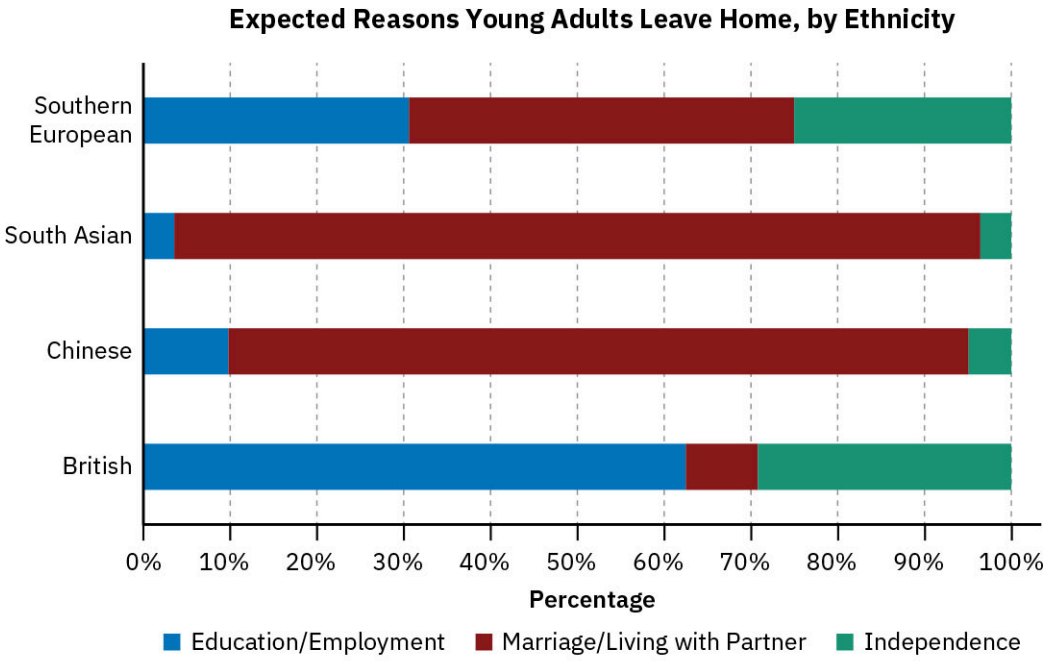


Source: Mariotti, T. (2024). Moving statistics: industry trends and data.
Data from CPS Migration/ Geographic Mobility Census data. U.S. Census.

FIGURE 12.14 Many developmental tasks of early adulthood are related to the top reasons that people in the United States move. Source: Mariotti, 2022. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

For many young adults, the decision about whether, when, and why to move from their parents' home is affected by culture, education, financial considerations, and responsibilities. Culture and ethnicity can influence the decision, as can the parent-child relationship. Among immigrants in Canada, for example, Chinese families, Southern European families (including Italian and Greek), and South Asian families (including Indian and Pakistani) cited marriage or cohabiting with a romantic partner as the most expected/acceptable reason for their young adult child to leave the family home. Among South Asian families, adult sons

are often expected to continue living in the parental home after marriage as part of a multi-generational household, which is more common in families with collectivistic values (Mitchell & Wister, 2015). British immigrant families cited educational and employment opportunities as the most expected reasons for adult children to leave their parents' home (Figure 12.15).



Source: Mitchell, B., et al. (2015). Midlife Challenge or Welcome Departure? Cultural and Family-Related Expectations of Empty Nest Transitions. *The International Journal of Aging and Human Development. 81*(4):260-280.

FIGURE 12.15 Parents' expectations about the reasons their young adult child will leave home vary by ethnicity. Source: Mitchell & Wister, (2015). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In the United States, ethnicity, age, income, and gender are all predictors of the likelihood that a young adult will live at home (Srygley, 2023). White young adults are the least likely group to do so, likely explained in part by cultural norms that prioritize individuality and independence. However, race and ethnicity are also tied to socioeconomic status and educational opportunities, and young adults who live with their parents are more likely to have low income, difficulty paying bills, and little to no savings. They are also less likely to be college educated. In the preceding image, we saw that young men are also more likely to live with their parents than young women, most likely because young women are more likely to be married and college educated, developmental milestones that provide reasons and means for living independently.

When young adults do move from their parents' home, they usually don't go far. Sixty percent live within 10 miles of their childhood home and 80 percent within 100 miles, though the distance varies by race/ethnicity and parental income (Hendren et al., 2022; Sprung-Keyser et al., 2022). These group differences are again most likely influenced by differing cultural priorities placed on staying near and being engaged with family, pursuing higher education, and having career goals.

For example, among the low-income regions of Appalachia, White young adults leave their hometown at much lower rates than the national average (Hendren et al., 2022). Proximity between adult children and their parents is associated with increased contact (Deane et al., 2016). This contact helps promote what family sociologist Vernon Bengtson called **intergenerational solidarity** (Bengtson & Schrader, 1982), a closeness among family generations promoted by frequent interaction, expressions of affection, alignment of values and beliefs, provision of help, proximity, and shared family norms and traditions.

After Leaving Home

The effect of a child moving out varies among cultures, as well as among individual families (Figure 12.16). For example, U.S. children and their parents typically report a decrease in conflict once the young adult moves out (Fang et al., 2021; Morgan et al., 2010), while Portuguese parents report experiencing greater agitation following the move (Mendonça & Fontaine, 2013). These differing emotional reactions are tied to different cultural values. White and U.S.-born young adults are more likely to view the role of family as supporting the aspirations and advancement of young adult children. However, young adults of communities of color and those from immigrant families are more likely to feel a "generational interdependence" in which help flows in all directions among siblings, parents, grandparents, and adult children (Swartz et al., 2017, p. 27).

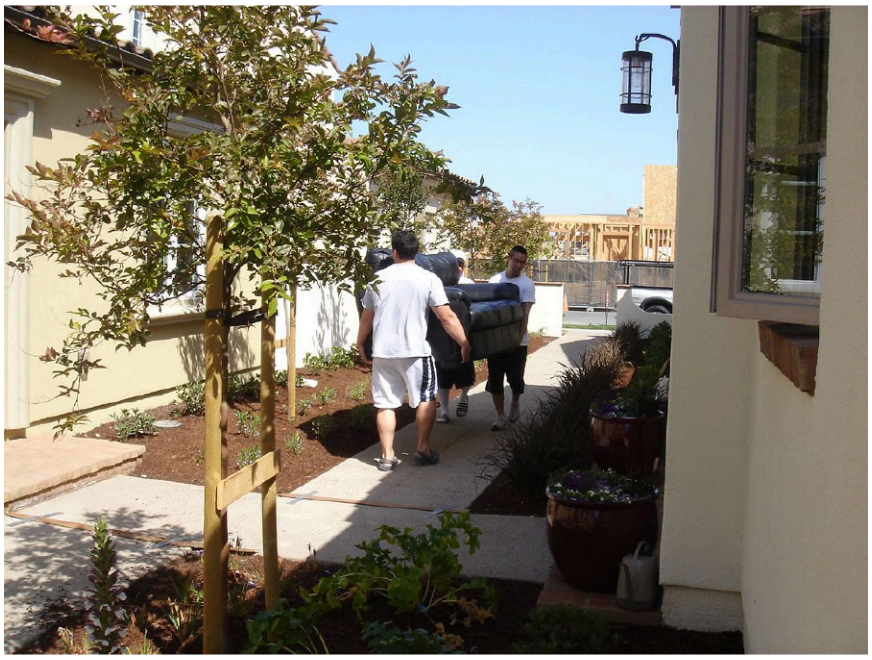


FIGURE 12.16 Household changes and family responses can vary greatly when an adult child moves out of the family home. (credit: modification of work "tim + friends moving the temporary couch" by jencu/Flickr, CC BY 2.0)

Most U.S. parents describe their relationship with their young adult children as "very good" or "excellent," staying in contact by phone or text at least several times a week (Minkin et al., 2024). They are satisfied with their level of involvement in the lives of their young adult children and continue to provide emotional support, especially from mothers to daughters. Young adult children continue to seek guidance from their parents, especially on career, health, and finances, and the most common source of disagreement is the young adult's financial decisions. Perhaps most transformative is that many parents feel they now truly know each other beyond their roles as parent and child (Minkin et al., 2024).

Young adults born in the United States, in particular, desire equitable relationships with their parents, like that of close friends (Figure 12.17). In fact, many young adults describe a parent as their best friend. Jake, an attorney from Chicago, says he talks to his family two to three times per week and solves his problems "by committee" (Swartz et al., 2017, p. 34). Rather than comparing their relationships to friendships, young adults from immigrant families describe their parents as more "directive" and focus on "family sociability and solidarity" generated by family gatherings, traditions, and celebrations.

FIGURE 12.17 Most parents are satisfied with their level of involvement in the lives of their young adult children and continue to provide emotional support, especially from mothers to daughters. (credit: modification of work "Hispanic-family" by eskypowell/nappy, Public Domain)

Some parents may be tempted to make life easier for their young adult children by hovering over their day-to-day activities and decisions (even from afar). But young adults who perceive their parents as controlling or manipulative are more likely to feel anxious and indecisive when making choices and commitments (Luebbe et al., 2018; Luyckx et al., 2007). Young adults and their parents must make space in their relationship for the value of trial-and-error. Even at this stage of life, the family can still serve as a secure base that provides young adults with the confidence and security to explore new people, places, and roles as they step into the adult world.

References

Ajrouch, K. J., Hu, R. X., Webster, N. J., & Antonucci, T. C. (2024). Friendship trajectories and health across the lifespan. *Developmental Psychology*, *60*(1), 94–107. https://doi.org/10.1037/dev0001589

Arnett, J. J. (2007). Socialization in emerging adulthood: From the family to the wider world, from socialization to self-socialization. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 208–231). The Guilford Press. https://psycnet.apa.org/record/2015-05080-004

Arnett, J. J. (2015). *The Oxford handbook of emerging adulthood*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199795574.001.0001

Aron, A., Lewandowski, G., Branand, B., Mashek, D., & Aron, E. (2022). Self-expansion motivation and inclusion of others in self: An updated review. *Journal of Social and Personal Relationships*, *39*(12), 3821–3852. https://doi.org/10.1177/02654075221110630

Astle, S. M., Shigeto, A., Anders, K. M., Rodriguez, K. K., & Rajesh, P. (2022). Emerging adult men's reports of sexual messages and desired support from parents, friends/peers, and online media in making sexual decisions during college. *Sexuality Research & Social Policy*, *19*, 1598–1610. https://doi.org/10.1007/s13178-022-00696-w

Ballard, J. (2019, July 30). *Millennials are the loneliest generation*. YouGov. https://today.yougov.com/society/articles/24577-loneliness-friendship-new-friends-poll-survey?redirect_from=%2Ftopics%2Flifestyle%2Farticles-reports%2F2019%2F07%2F30%2Floneliness-friendship-new-friends-poll-survey

Bengtson, V. L., & Schrader, S. S. (1982). Parents-child relations. In D. J. Mangen & W. A. Peterson (Eds.), *Research instruments in social gerontology* (pp. 114–128). University of Minnesota Press.

Carlson C. L. (2014). Seeking self-sufficiency: Why emerging adult college students receive and implement parental advice. *Emerging Adulthood*, *2*(4), 257–269. https://doi.org/10.1177/2167696814551785

Deane, G., Spitze, G., Ward, R. A., & Zhuo, Y. A. (2016). Close to you? How parent–adult child contact is influenced by family patterns. *Journals of Gerontology Series B, 71*(2), 344–357. https://doi.org/10.1093/geronb/gbv036

Demir, M., Orthel-Clark, H., Özdemir, M., & Özdemir, S. B. (2015). Friendship and happiness among young adults. In M. Demir (Ed.), *Friendship and happiness: Across the life-span and cultures* (pp. 117–135). Springer. https://psycnet.apa.org/record/2015-19322-007

Fang, S., Galambos, N. L. & Johnson, M. D. (2021). Parent–child contact, closeness, and conflict across the transition to adulthood. *Journal of Marriage and Family, 83*(4), 1176–1193. https://doi.org/10.1111/jomf.12760

Fiori, K. L., Windsor, T. D., & Huxhold, O. (2020). The increasing importance of friendship in late life: Understanding the role of sociohistorical context in social development. *Gerontology*, *66*(3), 286–294. https://doi.org/10.1159/000505547

Hendren, N., Porter, S. R., & Sprung-Keyser, B. (2022, July 25). *There's no place like (close to) home*. U.S. Census Bureau. https://www.census.gov/library/stories/2022/07/theres-no-place-like-home.html

Langheit, S., & Poulin, F. (2024). Links between best-friendship quality and well-being from early emerging adulthood to early established adulthood. *Emerging Adulthood, 12*(4), 539–552. https://doi.org/10.1177/21676968241248877

Lee, CY. S., & Goldstein, S. E. (2016). Loneliness, stress, and social support in young adulthood: Does the source of support matter? *Journal of Youth and Adolescence, 45*, 568–580. https://doi.org/10.1007/s10964-015-0395-9

Luebbe, A. M., Mancini, K. J., Kiel, E. J., Spangler, B. R., Semlak, J. L., & Fussner, L. M. (2018). Dimensionality of helicopter parenting and relations to emotional, decision-making, and academic functioning in emerging adults. *Assessment, 25*(7), 841–857. https://doi.org/10.1177/1073191116665907

Luyckx, K., Schwartz, S. J., Berzonsky, M. D., Soenens, B., Vansteenkiste, M., Smits, I., & Goossens, L. (2008). Capturing ruminative exploration: Extending the four-dimensional model of identity formation in late adolescence. *Journal of Research in Personality*, *42*(1), 58–82

MacInnis, C. C., Nguyen, P., Buliga, E., & Boyce, M. A. (2019). Cross-socioeconomic class friendships can exacerbate imposturous feelings among lower-SES students. *Journal of College Student Development*, *60*(5), 595–611. https://doi.org/10.1353/csd.2019.0056

Mariotti, T. (2022, July 28). *Moving statistics: Industry trends and data* (2024). Ruby Home Luxury Real Estate. https://www.rubyhome.com/blog/moving-stats/#:~:text=Young%20adults%20between%20the%20ages,population%20among%20all%20the%20states

Mendonça, M., & Fontaine, A. M. (2013). Late nest leaving in Portugal: Its effects on individuation and parent–child relationships. *Emerging Adulthood, 1*(3), 233–244. https://doi.org/10.1177/2167696813481773

Miething, A., Almquist, Y. B., Edling, C., Rydgren, J., & Rostila, M. (2017). Friendship trust and psychological well-being from late adolescence to early adulthood: A structural equation modelling approach. *Scandinavian Journal of Public Health*, *45*(3), 244–252. https://doi.org/10.1177/1403494816680784
Minkin, R., Parker, K., Menasce Horowitz, J., & Aragão, C. (2024, January 25). *Parents' relationship with their young adult children.* Pew Research Center. https://www.pewresearch.org/social-trends/2024/01/25/parents-relationship-with-their-young-adult-children/#:~:text=Overall%2C%20parents%20rate%20their%20relationship,is%20excellent%20(44%25%20vs
Mitchell, B. A., & Wister, A. V. (2015). Midlife challenge or welcome departure? Cultural and family-related expectations of empty nest transitions. *The International Journal of Aging & Human Development*, *81*(4), 260–280. https://doi.org/10.1177/0091415015622790
Morgan, E. M., Thorne, A., & Zurbriggen, E. L. (2010). A longitudinal study of conversations with parents about sex and dating during college. *Developmental Psychology, 46*(1), 139–150. https://doi.org/10.1037/a0016931
Nicolaisen, M., & Thorsen, K. (2017). What are friends for? Friendships and loneliness over the lifespan—from 18 to 79 years. *The International Journal of Aging and Human Development, 84*(2), 126–158. https://doi.org/10.1177/0091415016655166
Patel, A., & Ploughman, S. (2024, January 19). *The increasing importance of a best friend at work.* Gallup. https://www.gallup.com/workplace/397058/increasing-importance-best-friend-work.aspx
Paul, E. L., & Brier, S. (2001). Friendsickness in the transition to college: Precollege predictors and college adjustment correlates. *Journal of Counseling and Development*, *79*(1), 77–89. https://doi.org/10.1002/j.1556-6676.2001.tb01946.x
Peteet, B. J., Montgomery, L., & Weekes, J. C. (2015). Predictors of imposter phenomenon among talented ethnic minority undergraduate students. *Journal of Negro Education*, *84*(2), 175–186. https://doi.org/10.7709/jnegroeducation.84.2.0175
Plummer, D. L., Stone, R. T., Powell, L., & Allison, J. (2016). Patterns of adult cross-racial friendships: A context for understanding contemporary race relations. *Cultural Diversity & Ethnic Minority Psychology*, *22*(4), 479–494. https://doi.org/10.1037/cdp0000079
Rawson, C., Flanagan, G. L., & Frankel, R. S. (2024, June 6). *Study reveals more than half of American parents in these 36 states shell out to support their adult children.* USA Today. https://www.usatoday.com/money/blueprint/credit-cards/study-parents-still-financially-support-adult-children/
Rubin, M. (2012). Social class differences in social integration among students in higher education: A meta-analysis and recommendations for future research. *Journal of Diversity in Higher Education*, *5*(1), 22–38. https://doi.org/10.1037/a0026162
Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68
Schnyders, C. M., Rainey, S. & McGlothlin, J. (2018). Parent and peer attachment as predictors of emerging adulthood characteristics. *Adultspan Journal, 17*(2), 71–80. https://doi-org.pitt.idm.oclc.org/10.1002/adsp.12061
Selman, R. L. (1980). *The growth of interpersonal understanding.* Academic Press. https://archive.org/details/growthofinterper0000selm_y3t8
Slotter, E. B., & Gardner, W. L. (2011). Can you help me become the "me" I want to be? The role of goal pursuit in friendship formation. *Self and Identity*, *10*(2), 231–247. https://doi.org/10.1080/15298868.2010.482767
Sprung-Keyser, B., Hendren, N., & Porter, S. (2022). *The radius of economic opportunity: Evidence from migration and local labor markets.* U.S. Census Bureau Center for Economic Studies. https://www2.census.gov/ces/wp/2022/CES-WP-22-27.pdf
Srygley, S. (2023). *In the nest: Did the pandemic push young adults to live with their parents?* Population Reference Bureau. https://www.prb.org/wp-content/uploads/2024/01/In-the-Nest-SHED-Report-December-2023.pdf
Stephan, A. T. (2024). How grandparents inform our lives: A mixed methods investigation of intergenerational influence on young adults. *Journal of Adult Development, 31*, 40–52. https://doi.org/10.1007/s10804-023-09446-7
Strayhorn, T. L. (2018). *College students' sense of belonging: A key to educational success for all students (2nd ed.).* Routledge. https://doi.org/10.4324/9781315297293
Swartz, T. T., Hartmann, D., & Rumbaut, R. G. (2017). *Crossings to adulthood: How diverse young Americans understand and navigate their lives.* Brill. https://doi.org/10.1163/9789004345874
Szkody, E., Moussa Rogers, M., & McKinney, C. (2021). Positive health benefits of social support: Examining racial differences. *Translational Issues in Psychological Science, 7*(4), 419–434. https://doi.org/10.1037/tps0000252
The European Commission. (2024, March 4). Youth Policy Governance. https://national-policies.eacea.ec.europa.eu/youthwiki/chapters/sweden/1-youth-policy-governance
Wightman, P., Schoeni, R., & Robinson, K. (2012). *Familial financial assistance to young adults* [Working paper]. National Poverty Center, University of Michigan. https://npc.umich.edu/publications/working_papers/publication_id/239/
Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the lifespan: A meta-analysis. *Psychological Bulletin, 139*(1), 53–80, https://doi.org/10.1037/a0028601

12.4 Contexts: School and Work Settings in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the education and work decisions facing young adults after high school and the contexts that influence them
- Discuss the ways college pathways vary for young adults
- Describe work and career exploration during young adulthood
- Describe the early adult experience of finding work-life balance

Six years after graduating college, Sam finds his job as a design engineer very satisfying. He can apply his degree in mechanical engineering, works from home three days a week, and has the autonomy to implement creative ideas. However, his pathway to the job was challenging. His first job out of college, as a quality assurance engineer, required him to work from 8am to 5pm five days a week on the floor of a manufacturing plant. It was a noisy environment with low pay, but drawing on his community service experience volunteering for Habitat for Humanity, Sam impressed his supervisors with his adaptability, teamwork, and communication skills. Sam appreciates how far he has come during his early adult career and still looks for opportunities for continuing education and professional development to keep the doors open for future career mobility.

Sam's story illustrates how the education and work trajectories of young adults can be both challenging and rewarding. In this section, we consider the influences on and outcomes of decisions regarding continuing education and employment.

Trajectories

Developmental scientists often refer to life's developmental *trajectories* (Elder et al., 2015). A **trajectory** is a

predicted pathway of development, and it is usually determined by our behaviors within our context. For example, if your community and family are able to support a college education—standards that define your *context*—and you earn good grades in high school and choose to go to college in early adulthood—which defines your *behavior*—this interaction increases the likelihood that you will complete a college degree and earn a higher income, establishing your *trajectory*.

As the social clock of emerging and early adulthood has become more elongated and flexible in modern society, there is now space for many more possible developmental trajectories during this stage of life (Eliason et al., 2015, p. 207; Setterson & Ray, 2010) (Figure 12.18). Young adults perceive that personal accountability, independent decision-making, and financial independence are what make someone an adult, and the contexts from which they step into the adult world create a variety of ways to achieve these priorities (Sharon, 2016).

FIGURE 12.18 Many vocational and educational pathways are available to fit the varied needs and interests of emerging adults. (credit: modification of work "Presenting to a colleague" by CreateHERStock/nappy, Public Domain)

Post-High School Pathways

College enrollment rates are higher for the most recent cohorts of young adults than for previous generations, but since 2010 enrollment has remained relatively steady, with about 40 percent of eighteen- to twenty-four-year-olds enrolling in a two- or four-year institution (National Center for Education Statistics, 2024). That means that for more than half of young adults, college is not the pathway. Other pathways include starting a family, undertaking vocational training, accepting full-time employment, enlisting in military service, and signing on for volunteer work or political activism (Figure 12.19).

FIGURE 12.19 Vocational training can provide specific instruction and hands-on practice to prepare for careers in a variety of trades and technical fields. (credit: modification of work "U.S. Navy Sailor welds pipe aboard aircraft carrier" by Official U.S. Navy Page/Flickr, CC BY 2.0)

Many young adults credit community-service opportunities with sparking their interest in a particular field and providing a purpose-driven career pathway; however, most volunteerism and civic engagement among young adults occurs in sporadic episodes (Motulsky et al., 2020). Most young adults express interest in community service but do not regularly participate, citing a lack of time given the increasing responsibilities of early adulthood (Swartz et al., 2017; Wray-Lake et al., 2020). Female and Black young adults are most likely to volunteer their time for community service, but overall community service participation rates decline following high school. Political engagement and election participation increase, however, particularly among Black young adults (Wray-Lake et al., 2020). (Figure 12.20).

(a) (b)

FIGURE 12.20 Community service opportunities can help young adults develop valuable professional skills such as communication and teamwork. Volunteering may also spark interest in related vocational paths such as (a) environmental science or (b) culinary arts. (credit (a): modification of work "JR volunteers" by Virginia State Parks/Flickr, CC BY 2.0; (b): modification of work "Fulbright MENA Re-Entry Workshop Community Service - DC Central Kitchen" by Exchanges Photos/Flickr, Public Domain)

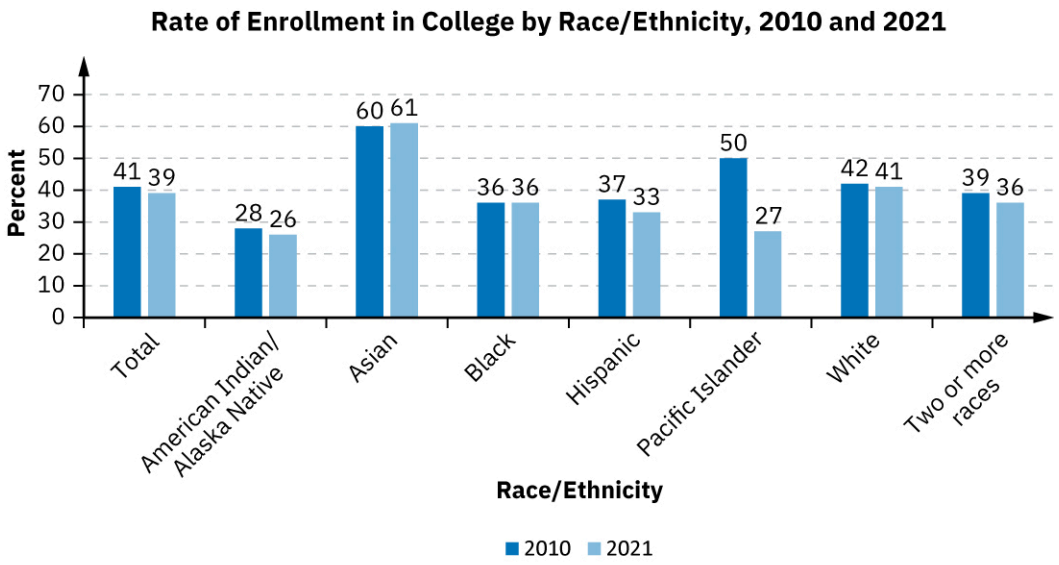
The Influence of Context

Many factors interact to influence the educational and vocational pathways young adults choose after high school, including family and community background, socioeconomic status, gender, and race. Those from rural areas often face hard choices, because they are less likely to find many educational and employment opportunities close to home (Fenton et al., 2023). Half of all first-year college students at public institutions come from within 50 miles of campus, but *education deserts*, communities with no nearby college or university, are more common in rural areas (Hillman & Weichman, 2016; Stolzenberg et al., 2020).

Young adults from families of low socioeconomic status (SES) see the greatest earnings benefits from a college degree. But parents and community members who did not attend college may be less likely to see college as a realistic or valuable choice, and rural young adults are less likely to be encouraged by their families and teachers to prepare for or pursue a college education (Byun et al., 2012; Healy, 2017). Many young adults in rural communities choose instead to seek employment in local jobs that are more familiar, accessible, and close to family, rather than investing time and money in an advanced education or professional relocation that may not yield worthwhile occupational results (Corbett, 2016). Many also cite obligations to family or family property that keep them attached to their hometown (Massey, 2020; Wilson et al., 2017).

Young adults who remain in their hometown communities are more likely to experience earlier transitions to other adult roles such as full-time employment, marriage, and parenthood (Fenton, 2023). While these early transitions are predictive of decreased substance use, increased financial independence, and life satisfaction for these young adults, early marriage and parenthood decrease the likelihood of college attendance or degree completion and predict a lower household income (Maggs et al., 2012; Monaghan, 2020). Economic pressures have also made it difficult for many rural areas to provide living conditions of sufficient quality for young adults to stay or to return home after college (Motulsky et al., 2020). School closures, decreased property values, poverty, unemployment, low wages, and a scarcity of health care providers have resulted in a declining rural population in the United States, driven in part by the exodus of young people from those areas and toward urban or suburban areas that offer more opportunities (Economic Research Service, 2017; Massey, 2020). Those who do leave rural hometowns to advance their education or career are more likely to come from White families with higher SES and higher levels of education (Brand & Xie, 2010; Brooks & Redlin, 2009; Carr & Kefalas, 2011).

Race and ethnicity also predict different decisions regarding employment and education (Figure 12.21). Family care priorities, financial obstacles, and discrimination can dissuade young Black and Hispanic adults with high occupational aspirations from relocating to pursue those goals (Brooks & Redlin, 2009). Black young adults are also more likely to feel disconnected from settings that might provide developmental pathways, such as school, the workplace, and the military (Fenton et al., 2023), in part because they are more likely than White young adults to face interpersonal and institutional discrimination there (Hope et al., 2015). However, Black young adults are more likely than their White socioeconomic peers to complete a college degree (Karlson, 2019).



Note: Race categories exclude persons of Hispanic ethnicity.

Source: U.S. Department of Commerce, Census Bureau. (2023). Current population survey. Digest of Education Statistics 2023. Table 302.60

FIGURE 12.21 Race and ethnicity can predict decisions about employment and education. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The intersection of race and gender identity also produces variation in trajectories for young adults. Partly because young men anticipate better prospects for stable well-paying jobs without a college education in stereotypically masculine vocations such as plumbing or construction, fewer men attend college than women. This gender gap is narrower among Black young adults (37 percent of men attend college vs. 44 percent of women) than among White (40 percent of men, 50 percent of women) and Hispanic young adults (33 percent of men, 44 percent of women) (Fry, 2023). White young adults and young adults of color enlist in the military at comparable rates, but women are much less likely to do so than men (Barosso, 2019). White and Hispanic young adults are more likely to marry earlier than Black or Asian young adults, but Black women are more likely than White women to work, be the primary breadwinner in their household, and have caregiving responsibilities (Payne, 2019; Weller, 2019).

The transition into adulthood can be particularly challenging for young adults with disabilities. Interviews with young people with a range of disabilities, their caregivers, and service providers reveal several barriers to participating in typical adult life (ALSO, 2023; Stewart et al., 2014):

- **Pace**: Life for emerging adults is influenced not only by a social clock, but also by busy schedules and fast-paced interactions that can leave little room for those who need a flexible pace to accomplish their goals.
- **Complexity and Literacy**: Changing procedures and jargon-filled instructions can be confusing for those trying to accomplish even everyday tasks, such as reading a recipe or putting gas in the car.
- **Stigma**: In a culture that values independence in early adulthood, it can be difficult for a young adult with disabilities to ask for help and support. It is especially challenging to overcome "either-or" thinking that assumes someone either can do everything by themselves or needs constant supervision, with no gray area in between.

Many families are understandably reluctant to give their young adults more autonomy within such an uncertain landscape. Young adults with disabilities were often more willing than their families to pave their own way, despite the lack of clear directions or guaranteed outcomes, and providing opportunities for young adults with disabilities to exercise more independence can also reduce stigma within the community. The success of these young people requires early, careful, and customized planning that promotes collaboration

among available disability services and the family, and that accommodates the strengths and limitations of the young adult within their desired future (Stewart et al., 2014). An individualized and holistic approach can help facilitate the development of life skills, opportunities, and support that will improve a young adult's quality of life in domains such as independent living, employment, education, social life, and community involvement (ALSO, 2023).

College Considerations

College is not the only or best path for everyone, and for those who choose it, it not a one-size-fits-all experience. For first-generation college-students, the transition to college life can be a culture shock. While many such students begin college with pride and determination, the environment can feel uncomfortable or overwhelming as they navigate unfamiliar social networks and intimidating institutional policies and procedures (Motulsky et al., 2020). After high school, some students choose to do a gap year, to gain valuable personal and professional development before beginning college, through participation in immersive experiences such as community service work. Other students combine military service and college education by joining the Reserve Officers' Training Corps (ROTC) (Figure 12.22). In exchange for an eight-year service commitment following graduation, the ROTC offers scholarships to adults interested in gaining military service training while enrolled as full-time college students (U.S. Army, n.d.). Next we look at pathways through college and outcomes for those who enroll.

FIGURE 12.22 Some students combine military service and college education by joining the Reserve Officers Training Corps (ROTC). (credit: modification of work "Cadets with the Junior Reserve Officers' Training Corps run through a confidence course" by Pvt. Brianne Patterson, United States Army, Public Domain)

LINK TO LEARNING

A gap year can provide an emerging adult with time for reflection and exploration that is useful when choosing long-term education and vocational goals. Visit the Gap Year Association (https://openstax.org/r/104GapYearAssoc) to learn about options for gap year activities and even find a gap-year consultant.

Pathways

Statistics show significant differences in how and when young adults complete their undergraduate degrees (Monaghan, 2020). These differences often result from socioeconomic inequities that can present delays and interruptions for students with lower SES. Often driven by the need to find affordable, local, and part-time enrollment options, they are more likely to begin their college education as part-time students at a community college, a pathway associated with a lower likelihood of degree completion than full-time enrollment at a four-year institution. Students with lower SES are also more likely to be employed full time, get married, and become parents during emerging adulthood, which often necessitates part-time enrollment and lowers degree completion rates, especially for women.

Research on college enrollment patterns identified two primary groups of students, labeled rapid completers (38 percent) and marginal college goers (43 percent). Rapid completers enrolled and completed their degree before age 25. They were more likely to come from college-educated families with high SES. They also had the highest employment rates (part time during college and full time after graduation), with a median annual income of $94,000 during adulthood. Marginal college-goers attended part time and for short spells, with a 6 percent degree-completion rate during early adulthood. They were more likely to be employed full time and married during their college enrollment (Monaghan, 2020). Working part-time is associated with achieving better college outcomes, including greater campus engagement, leadership and skill development, and social networking, especially for first-generation students (Nuñez & Sansone, 2016; Pike et al., 2008; Salisbury et al., 2012;). However, working more than twenty hours a week is associated with a lower grade point average and lower college completion rate (Davis, 2023).

Outcomes

Young adults who enroll in college usually do so to get better job opportunities, including higher-earning and purpose-driven careers (Eagen et al., 2013; Johnson, 2023). If higher earnings are the goal, data suggest that completing an internship or study abroad experience during college is predictive of higher earnings in the workplace (Wolniak & Engberg, 2019). And while most graduates believe their education was a good investment, if they had to do it over, more than half say they would choose a different major to be better positioned to pursue their passions and better job opportunities (Johnson, 2023). Switching majors (as 30 percent of students do) can increase a student's likelihood of graduating, especially when done within three years of starting and with the help of campus career resources (Crawford Ciglar, 2020; National Center for Education Statistics, 2017).

The benefits of choosing the "right" major continue after college: Adult job satisfaction and commitment have been found to be predicted by perceived alignment between college major and field of employment (Wolniack & Engberg, 2019; Wolniak & Pascarella, 2005), regardless of income. However, even if a graduate enters the workforce in a career exactly matching their major, chances are they won't stay in that specific field over the course of their career (Fox, 2022; Roberts Wesleyan College, 2020).

Career Exploration

It is estimated that the average adult will change careers (not just jobs) five to seven times in their life (Roberts Wesleyan College, 2020). In 2022 alone, 61 percent of young adults in the workforce who had quit their job within the last year said they wanted to change their field of work or occupation (Fox, 2022). In fact, some of the most satisfying jobs for emerging adults might not even exist yet. When most of today's working adults were young, there was no such thing as social media, let alone a job as a social media manager. As technology continues to evolve, so will occupations in this and many other fields.

Career Preparation and Readiness

According to career expert Vicki Salemi, the key to professional readiness is to develop "transferable skills," including communication, problem-solving, and collaboration, and to emphasize those skills on your resume and in interviews (Fox, 2022). Employers say they prefer applicants with "active and applied learning experiences," which apprenticeships or internships can provide (Flaherty, 2021). Two-thirds of employers also say they want adaptable employees with good communication skills, which can be developed as a result of teamwork opportunities in military service or study-abroad experiences. If you are looking for a career that provides opportunity to learn new skills, face new challenges, and serve a purpose to others, completing community-service or civic engagement experiences is the best predictor of those outcomes. Such experiences also develop problem-solving skills, teamwork, and work ethic, among the top abilities employers seek (Gray, 2024).

Career Goals

A cross-cultural meta-analysis of the priorities influencing the career goals of young people found that they were influenced by extrinsic factors (such as the potential income or accessibility of the job), intrinsic motivations (such as personal interest or opportunities for professional development), and interpersonal influences (such as social responsibility or family influence). Those coming from families with more collectivistic cultural values, such as in India and South Korea, were more likely to be influenced by extrinsic factors and interpersonal influences. U.S. job seekers, on the other hand, were more likely to be guided by intrinsic motivations (Akosah-Twumasi et al., 2018).

Developing a vocational identity in early adulthood requires exploring the way our career goals relate to aspects of our self, such as interests, values, and abilities. Engaging in this exploration is predictive of job motivation, performance, and flexibility (Colquitt et al., 2000; Kim et al., 2023; Rowald, 2007). Research on college students shows a general increase in exploration and commitment during emerging adulthood (Kim et al., 2023), facilitated by aspects of personality such as conscientiousness, openness, internal locus of control, and self-efficacy (Lee et al., 2023). Young adults who are more satisfied with their career trajectories credit supportive mentorship from family, educators, and work colleagues, as well as their own proactive and strategic career exploration during school and in early job experiences (Swartz et al., 2017) (Figure 12.23).

FIGURE 12.23 For young adults, mentorship can be an important part of developing satisfaction with their career choices. (credit: modification of work "Women In Tech - 77" by WOCInTech Chat/Flickr, CC BY 2.0)

Like other social developments, a young adult's career trajectory reflects the interaction of context and behavior. According to Donald Super's lifespan theory of career development, our career trajectory starts as early as childhood and evolves throughout adulthood as it interacts with other developmental roles and tasks (Super, 1990). In adolescence and emerging adulthood, the focus is *exploration.* However, in early to middle adulthood, the priority shifts to *establishment,* which includes committing to and advancing within a career in ways that consider the relative value of other roles such as family, peers, school, and the community.

For some young adults, the career establishment process may focus more on taking on more responsibility and advancing within successful or "good" jobs or careers. Young adults describe "good" jobs as full-time and stable positions that are personally rewarding, allow autonomy and responsibility at work, present opportunities to serve or mentor others, and offer generous employee compensation and benefits (such as work from home, health care, and vacation time). Those who find themselves in "bad" jobs may be more focused on changing jobs or careers, because their work offers insufficient compensation and benefits, inadequate training, little feeling of accomplishment or empowerment, and unsafe, unfair, or degrading conditions (Swartz et al., 2017).

As with other trajectories, the context from which people emerge into adulthood has a big influence on the likelihood of finding themselves in a good or bad job. Those in good jobs were more likely to come from

privileged socioeconomic backgrounds, which provided support for advanced education and professional development experiences like study abroad or unpaid internships and safety nets to buffer them against setbacks. However, young adults also report behaviors that may have increased the likelihood of success in career establishment. For example, those in good jobs often approached their career with a more developmental and strategic mindset, using entry-level jobs to develop skills, expertise, and professional connections that helped them advance to more satisfying and challenging positions.

Young adults in bad jobs are more likely to develop a learned helplessness, which undermines a sense of direction or agency in their career development (Swartz et al., 2017). Often overwhelmed by the responsibilities of full-time job, education, and family, these adults dream of better work but are often unsure how to realize those dreams and lack available tools, support, or mentorship to guide them.

LINK TO LEARNING

Overwhelmed by the task of choosing a career direction? Explore this advice for organizing your career exploration and decision-making process (https://openstax.org/r/104CareerExplre) from career development facilitator Dawn Rosenberg McCay.

Work-Life Balance

As young adults take on more responsibilities, they must balance obligations at work or school with other priorities. Finding this balance does not require giving equal attention to everything or "doing it all." Rather, **work-life balance** is the arrangement that allows a person to spend the desired amount of time on each of the activities that matter to them, such as work, leisure, education, and caregiving (Dang et al., 2024). The amount of time allocated to various life activities may be unequal and change according to needs. McAlary describes the value of seeing adult life balance as a scale that can tilt toward the activities that most need our attention, including as our priorities change over time (McAlary, 2017). College students report typically spending the most time per week (approximately thirty hours) on educational activities like attending class and studying. And while frequently exhibiting signs of burnout and exhaustion, young adults, including those who are caregivers for aging parents or younger siblings, report achieving a moderate level of balance between work and other priorities (Dang et al., 2024). Young adults with an internal locus of control are more likely to use active, problem-focused coping strategies to manage a broad range of developmental challenges, which can result in higher self-esteem, feelings of competence, and life satisfaction. (Kurtović et al., 2018; Singh & Choudhry, 2014). Some researchers have noted that more recently young adults are more willing to advocate for their work-life balance, screening jobs for or directly asking their employers to provide increased flexibility such as remote work, flexible hours, and time for self-care (Lee & Diller, 2023).

LIFE HACKS

Developing Work-Life Balance Early in Your Career

The American Psychological Association offers these active coping strategies for developing and maintaining work-life balance during early adulthood (DeAngelis, 2017):

- **Plan your tasks at home and at work in advance.** That includes daily, weekly, and even long-term career planning.
- **Communicate**. Talk with your family, friends, romantic partners, and work colleagues. Don't expect others to intuitively know what you need and want. Ask for and offer help.
- **Set boundaries**. Know when to (politely) say no so that you are able to give adequate time to the tasks already on your plate and take care of your priorities and needs.
- **Don't give 110 percent**. It's too early to get burned out! Give yourself (and others) the grace to sometimes fail or be "good enough."

Life balance in early adulthood relates not only to whether a person is able to satisfactorily divide their time among adult responsibilities, but also to the way they prioritize the sequence of developmental challenges. So far in this chapter, we have addressed the early adulthood challenges to develop the self, identity, relationships with friends and family, and educational and vocational pathways. In the last section, we discuss how young adults' romantic relationships grow within the context of these other changes.

References

Advocates for Life Skills & Opportunity. (2023, May 25). *The importance of life skills for young adults with disabilities.* https://alsoweb.org/nonprofit-blog/the-importance-of-life-skills-for-young-adults-with-disabilities/

Akosah-Twumasi, P., Emeto, T. I., Lindsay, D., Tsey, K., & Malau-Aduli, B. S. (2018). A systematic review of factors that influence youths career choices—the role of culture. *Frontiers in Education, 3,* https://doi.org/10.3389/feduc.2018.00058

Brand, J. E., & Xie, Y. (2010). Who benefits most from college?: Evidence for negative selection in heterogeneous economic returns to higher education. American Sociological Review, 75(2), 273–302. https://doi.org/10.1177/0003122410363

Brooks, W. T., & Redlin, M. (2009). Occupational aspirations, rural to urban migration, and intersectionality: A comparison of White, Black, and Hispanic male and female group chances for leaving rural counties. *Southern Rural Sociology, 24*(1), 130–152. https://egrove.olemiss.edu/jrss/vol24/iss1/8

Byun, S., Meece, J. L., Irvin, M. J., & Hutchins, B. C. (2012). The role of social capital in educational aspirations of rural youth. *Rural Sociology, 77*(3), 355–379. https://doi.org/10.1111/j.1549-0831.2012.00086.x

Carr, P. J., & Kefalas, M. J. (2011). Straight from the heartland: Coming of age in Ellis, Iowa. In M. C. Waters, P. J. Carr, & M. J. Kefalas (Eds.), *Coming of age in America: The transition to adulthood in the twenty-first century* (pp. 28–58). University of California Press.

Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology, 85*(5), 678–707. https://doi.org/10.1037/0021-9010.85.5.678

Corbett, M. (2016). Rural futures: Development, aspirations, mobilities, place, and education. *Peabody Journal of Education, 91*(2), 270–282. https://doi.org/10.1080/0161956X.2016.1151750

Crawford Ciglar, C. (2020, November 5). *Normalizing the norm of changing college majors.* University of Tulsa. https://utulsa.edu/news/normalizing-the-norm-of-changing-college-majors/#:~:text=As%20a%20practical%20matter%2C%20about,course%20of%20their%20college%20career

Dang, S., Looijmans, A., Lamura, G., & Hagedoorn, M. (2024). Perceived life balance among young adult students: A comparison between caregivers and non-caregivers. *BMC Psychology, 12*(18). https://doi.org/10.1186/s40359-023-01500-z

Davis, A. M. D. (2023). Is working in college worth it? How hours on the job affect postsecondary outcomes. *Educational Evaluation and Policy Analysis, 0*(0). https://doi.org/10.3102/01623737231210243

DeAngelis, T. (2017, December). Homing in on work-life balance. *Monitor on Psychology, American Psychological Association, 48*(11), 32. https://www.apa.org/monitor/2017/12/cover-juggling

Economic Research Service. (2017). *Rural education at a glance, 2017 edition* (Economic Information Bulletin 171). U.S. Department of Agriculture. https://www.ers.usda.gov/webdocs/publications/83078/eib-171.pdf?v=42830

Elder, G. H., Jr., Shanahan, M. J., & Jennings, J. A. (2015). Human development in time and place. In M. H. Bornstein, T. Leventhal, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Ecological settings and processes* (7th ed., pp. 6–54). Wiley. https://doi.org/10.1002/9781118963418.childpsy402

Eliason, S. R., Mortimer, J. T., & Vuolo, M. (2015). The transition to adulthood: Life course structures and subjective perceptions. *Social Psychology Quarterly, 78*(3), 205–227. https://doi.org/10.1177/0190272515582002

Fenton, M. P., Forthun, L. F., & Lynne, S. D. (2023). Pathways to adulthood in rural America: A latent profile and latent transition analysis of adult social roles. *Journal of Youth & Adolescence, 52*, 1170–1190. https://doi.org/10.1007/s10964-023-01755-0

Flaherty, C. (2021, April 5). *What employers want.* Inside Higher Ed. https://www.insidehighered.com/news/2021/04/06/aacu-survey-finds-employers-want-candidates-liberal-arts-skills-cite-preparedness

Fox, M. (2022, March 9). *Half of Americans who quit their job last year made a career change. Here are 5 steps to take to do the same.* CNBC. https://www.cnbc.com/2022/03/09/53-percent-of-americans-quit-jobs-last-year-to-make-a-career-change-heres-how-to-do-the-same.html

Fry, R. (2023, December 18). *Fewer young men are in college, especially at 4-year schools.* Pew Research Center. https://www.pewresearch.org/short-reads/2023/12/18/fewer-young-men-are-in-college-especially-at-4-year-schools/#:~:text=About%201%20million%20fewer%20young,released%20U.S.%20Census%20Bureau%20data

Gray, K. (2024, January 16). *The key attributes employers are looking for on graduates' resumes.* National Association of Colleges and Employers. https://www.naceweb.org/talent-acquisition/candidate-selection/the-key-attributes-employers-are-looking-for-on-graduates-resumes

Healy, J. (2017, June 23). Out of high school, into real life. *The New York Times.* https://www.nytimes.com/2017/06/23/us/out-of-high-school-into-real-life.html

Hillman, N., & Weichman, T. (2016). *Education deserts: The continued significance of "place" in the twenty-first century.* American Council on Education, Center for Policy Research and Strategy. https://www.acenet.edu/Documents/Education-Deserts-The-Continued-Significance-of-Place-in-the-Twenty-First-Century.pdf

Hope, E. C., Hoggard, L. S., & Thomas, A. (2015). Emerging into adulthood in the face of racial discrimination: Physiological, psychological, and sociopolitical consequences for African American youth. *Translational Issues in Psychological Science, 1*(4), 342–351. https://doi.org/10.1037/tps0000041

Johnson, R. (2023, March 20). *New survey finds most college grads would change their majors.* Best Colleges. https://www.bestcolleges.com/blog/college-graduate-majors-survey/

Karlson, K. B. (2019). College as equalizer? Testing the selectivity hypothesis. *Social Science Research, 80*, 216–229. https://doi.org/10.1016/j.ssresearch.2018.12.001

Kim, Y., Lee, Y., & Yang, E. (2023). Vocational identity of emerging adults: The inter-relationships of vocational identity dimensions. *Journal of Adult Development, 30,* 347–358. https://doi.org/10.1007/s10804-023-09438-7

Kurtović, A., Vuković, I., & Gajić, M. (2018). The effect of locus of control on university students' mental health: Possible mediation through self-esteem and coping. *Journal of Psychology, 152*(6), 341–357. https://doi.org/10.1080/00223980.2018.1463962

Lee, M., & Diller, N. (2023, September 27). *Zillenials, notorious for work-life balance demands, search for something widely desired.* USA Today. https://www.usatoday.com/story/money/personalfinance/2023/09/27/not-only-younger-generations-want-work-life-balance/70896325007/

Lee, S. D., Aquino, A., Kuncel, N. R., & Hansen, J. C. (2023). Personality predictors of career exploration: A meta-analysis. *The Career Development Quarterly, 71*(1), 41–55. https://doi.org/10.1002/cdq.12315

Maggs, J. L., Jager, J., Patrick, M. E., & Schulenberg, J. (2012). Social role patterning in early adulthood in the USA: Adolescent predictors and concurrent wellbeing across four distinct configurations. *Longitudinal and Life Course Studies, 3*(2), 190–210. https://doi.org/10.14301/llcs.v3i2.183

Massey, D. (2020). *The rural youth exodus of U.S. counties: Community level characteristics and trends.* University of Wisconsin-Madison. https://dpla.wisc.edu/wp-content/uploads/sites/1021/2021/09/Professional-Project-PDF_-Danielle-Massey.pdf

McAlary, B. (2017). *Destination simple: Everyday rituals for a slower life.* Head of Zeus.

Monaghan, D. B. (2020). College-going trajectories across early adulthood: An inquiry using sequence analysis. The Journal of Higher Education, 91(3), 402–432. https://doi.org/10.1080/00221546.2019.1647584

Motulsky, S. L., Gammel, J. A., & Rutstein-Riley, A. (2020). Identity and lifelong learning: Becoming through lived experience. Information Age Publishing.

National Center for Education Statistics. (2017). Beginning college students who change their majors within 3 years of enrollment (NCES 2018-434). U.S. Department of Education. https://nces.ed.gov/pubs2018/2018434.pdf

National Center for Education Statistics. (2024, May). College enrollment rates. U.S. Department of Education. https://nces.ed.gov/programs/coe/indicator/cpb/college-enrollment-rate

Nuñez, A., & Sansone, V. A. (2016). Earning and learning: Exploring the meaning of work in the experiences of first-generation Latino college students. *The Review of Higher Education 40*(1), 91–116. https://doi.org/10.1353/rhe.2016.0039

Payne, K. K. (2019). Median age at first marriage, 2017. *Family Profiles, FP-19-06.* Bowling Green State University: National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-19-06

Roberts Wesleyan College. (2020, March 1). Career change statistics. https://academicexploration.roberts.edu/career-change-statistics/

Rowold, J. (2007). The effect of career exploration on subsequent training performance. *Human Resource Development International, 10*(1), 43–58. https://doi.org/10.1080/13678860601170278

Salisbury, M. H., Pascarella, E. T., Padgett, R. D., & Blaich, C. (2012). The effects of work on leadership development among first-year college students. Journal of College Student Development, 53(2), 300–324. https://doi.org/10.1353/csd.2012.0021

Settersten, R. A., Jr., & Ray, B. (2010). What's going on with young people today? The long and twisting path to adulthood. Future Child, 20(1), 19–41. https://doi.org/10.1353/foc.0.0044

Sharon, T. (2016). Constructing adulthood: Markers of adulthood and well-being among emerging adults. *Emerging Adulthood, 4*(3), 161–167. https://doi.org/10.1177/

2167696815579826
Singh, T. K., & Choudhri, N. (2014). Early adulthood: The role of locus of control, meaning of life and subjective well-being. Journal of Psychosocial Research, 9(1), 131–139. https://www.proquest.com/docview/1542693801?sourcetype=Scholarly%20Journals
Stewart, D., Law, M., Young, N. L., Forhan, M., Healy, H., Burke-Gaffney, J., & Freeman, M. (2014). Complexities during transitions to adulthood for youth with disabilities: person–environment interactions. *Disability and Rehabilitation, 36*(23), 1998–2004. https://doi.org/10.3109/09638288.2014.885994
Stolzenberg, E. B., Aragon, M. C., Romo, E., Couch, V., McLennan, D., Eagan, M. K., & Kang, N. (2020). *The American freshman: National norms Fall 2019*. Higher Education Research Institute at UCLA. https://www.heri.ucla.edu/monographs/TheAmericanFreshman2019.pdf
Super, D.E. (1990). A life-span, life-space approach to career development. In D. Brown, L. Brooks, and associates (Eds.), *Career choice and development: Applying contemporary theories to practice* (2nd ed., pp. 197–261). Jossey-Bass. https://doi.org/10.1016/0001-8791(80)90056-1
Swartz, T. T., Hartmann, D., & Rumbaut, R. G. (2017). Crossings to adulthood: How diverse young Americans understand and navigate their lives. Brill. http://dx.doi.org/10.1163/9789004345874
U.S. Army. (n.d). Army ROTC. https://www.goarmy.com/careers-and-jobs/find-your-path/army-officers/rotc.html
Weller, C. E. (2019, December 5). *African Americans face systematic obstacles to getting good jobs.* Center for American Progress. https://www.americanprogress.org/article/african-americans-face-systematic-obstacles-getting-good-jobs/
Wilson, N. N., Sailor, J. L., Calix, S. I., & Carney, W. (2017). Leaving home for African Americans in the emerging adulthood era: A phenomenological study. *The Qualitative Report, 22*(2), 527–541. https://doi.org/10.46743/2160-3715/2017.2517
Wolniak, G. C., & Engberg, M. E. (2019). Do "high-impact" college experiences affect early career outcomes? *Review of Higher Education, 42*(3), 825–858. https://doi.org/10.1353/rhe.2019.0021
Wolniak, G. C., & Pascarella, E. T. (2005). The effects of college major and job field congruence on job satisfaction. *Journal of Vocational Behavior, 67*(2), 233–251. https://doi.org/10.1016/j.jvb.2004.08.010
Wray-Lake, L., Arruda, E. H., & Schulenberg, J. E. (2020). Civic development across the transition to adulthood in a national U.S. sample: Variations by race/ethnicity, parent education, and gender. *Developmental Psychology, 56*(10), 1948–1967. https://doi.org/10.1037/dev0001101

12.5 Finding Love, Intimacy, and Romance in Early Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the relationship between the development of identity and intimacy
- Describe the characteristics of intimate relationships in early adulthood
- Describe the search for, establishment of, and maintenance of romantic relationships
- List the considerations young adults face in starting a family

Sara stares at her phone as she tries to set up her profile on a new dating app. No wonder she is having so much trouble finding love; she cannot even decide what she is looking for. She knows she wants a partner who will be there for her when she needs support. Someone she can talk to and trust. But also someone funny she can hang with, with whom she has things in common. And at the same time, Sara is looking for a person who appreciates her individuality and independence, who can help her achieve her goals and dreams without being suffocating or controlling. She wants to be connected to her partner but independent. Similar but not the same. Is that too much to ask?

According to Erikson's theory of psychosocial development, adolescents and emerging adults should prioritize self-focused identity development to prepare for the other-focused stages of adulthood, starting with the challenge of intimacy versus isolation. As Erikson put it, "the condition of twoness is that one must first become oneself" (Erikson, 1982, p. 101). In this section we explore how modern young adults navigate Erikson's developmental challenge of "twoness."

The Search for Intimacy

Recall that Erikson described intimacy as the young adult challenge of establishing close and trusting relationships with others. Researchers like Carol Gilligan, who noted that Erikson did not take into account women's experiences, have argued that Erikson's proposed developmental sequence of identity first, intimacy second is outdated and gender-biased (Gilligan, 1982). Given that emerging adulthood is both longer and more flexible in the twenty-first century, we may ask whether identity and intimacy can develop together, or even whether women, who exhibit intimate mutual sharing earlier within their adolescent friendships than do men, might develop them in the reverse order (Rudolph & Dodson, 2022). However, research has not consistently substantiated these criticisms. Longitudinal and cross-sectional studies have found that identity development in adolescence and emerging adulthood predicts intimacy and romantic partnership quality in early adulthood for both men and women, though women do report higher levels of intimacy (Bakken & Huber, 2005; Beyers & Seiffge-Krenke, 2010; Czyżowska et al., 2019; Kerpelman et al., 2008; Kroger, 2015; Montgomery, 2005).

According to intimacy researcher Ruth Sharabany (1994), high-quality intimate relationships are characterized by frankness and spontaneity, sensitivity and knowing, exclusivity, giving and helping, imposing and taking, common activity, trust and loyalty, and secure attachment (Figure 12.24). While the security

provided by attachment was originally studied as an aspect of infant-caregiver relationships, Hazan & Shafer (1987) proposed that it continues to have value throughout the lifespan and in other close relationships, including adult romantic relationships. Indeed, secure adult attachment style is predictive of improved conflict resolution, mutual caring and trust, emotional closeness, and relationship satisfaction within young adult romantic relationships. (Haydon et al., 2012; Waters et al., 2018).

FIGURE 12.24 Romantic relationships in early adulthood can provide a context for close intimate sharing. (credit: "Lesbian couple" by Alyssa Sieb/nappy, Public Domain)

Given the effort of forming truly intimate romantic relationships and their apparent psychological depth, young adults meeting potential mates may find themselves asking, "Can I be committed to this person? Are we compatible? Can I tolerate [their] shortcomings, values, and lifestyle?" (Korobov & Thorne, 2006, p. 28). These are complex questions with often uncertain answers. It is perhaps not surprising, then, that some young adults may choose to engage in no-strings-attached sexual relationships until they can feel more confident and certain about committing to an intimate romantic relationship with a person.

LINK TO LEARNING

People with disabilities have the same variety of sexual and romantic feelings as everyone else, but face additional challenges and questions related to their differing abilities. Watch this video about the value of an inclusive approach to sexual and romantic relationships (https://openstax.org/r/104InclsvRltns) to learn more.

The prevalence of casual sex (sex that occurs outside a committed relationship) is about 10 to 15 percent lower than it was in 2007, with 22 percent of women and 24 percent of men between the ages eighteen and twenty-three reporting they experienced casual sex within the last month (South & Lei, 2021). Casual sex can occur in a number of contexts, including "hook-ups" or "one-night-stands," but the friends-with-benefits relationship has received increasing attention in both pop culture and research for its potential to evolve into something more (Bisson & Levine, 2009; Jovanovic & Williams, 2018; Machia et al., 2020; Mongeau et al., 2013).

A friends-with-benefits relationship (FWBR) occurs when two people in a nonsexual relationship begin having sex, without committing to becoming a romantic couple. Although the relationship includes a certain level of closeness based on friendship and introduces sexual intimacy, the participants do not expect the same level of attachment or commitment required of a truly intimate romantic relationship (Machia et al., 2020). While a FWBR can provide a safe, familiar, and convenient context to explore sexual or romantic feelings with another person, research indicates women are more likely than men to view it as temporary, with greater expectations that it will eventually evolve into a romantic relationship or revert to a nonsexual friendship. In contrast, most men expected the relationship to remain a FWBR (Machia et al., 2020). The participants in heterosexual FWBR often do not realize or communicate these differing expectations (Bisson & Levine, 2009), which may explain

why most result in a complete end to a relationship of any kind—friendship or romantic—and only 15 percent evolve into romantic relationships (Machia et al., 2020).

IT DEPENDS

Breaking Up Is Hard to Do

Researchers at the University of Tennessee, Knoxville wanted to know why couples in emerging adulthood break up (Norona et al., 2017). They recruited a sample of young adults ages eighteen to twenty-five who had recently initiated a break-up with their romantic partner and asked them to respond to the following prompt:

Breaking up with a boyfriend or girlfriend is something that is very common. Have you been the one to initiate a breakup within the last six months? In other words, have you been the one to decide to break up with your boyfriend or girlfriend in the last six months (this includes breakups that you would consider 'mutual')?

(If yes:) Tell us your story of the breakup. Describe what led you to break up with your last boyfriend or girlfriend. Please include enough detail to help another person understand how you thought and felt.

The responses reflected the convergence of two themes of emerging adulthood: connection and independence. The most common reason young adults gave for ending relationships was that their romantic partner did not meet their desire for connection, such as with intimacy, shared time, or sexual satisfaction. These responses were consistent with Erikson's psychosocial challenge of establishing intimacy in early adulthood.

On the other hand, the second most common reason given was the partner's failure to support the respondent's need for independence, such as maintaining their individual identity, meeting life goals, and preserving personal space and financial independence. These results highlighted the challenge for young adults of reconciling their need to develop the self with their desire to form connections with others.

Romantic Relationships

While Erikson and many others assert that the willingness and capacity for intimacy and romantic partnership are developmental priorities of early adulthood, we should not take this to mean that being single is developmentally problematic. While most people experience several committed romantic relationships during early adulthood, at any given time about half of young adults are single (Cox, 2023; Rauer et al., 2013). Those in committed romantic relationships do generally report higher life satisfaction than their single peers, but part of this satisfaction may come from recognizing that they are meeting social-clock expectations for romantic involvement. This comparison to the social clock may be complicated by the developmental timing of sexual identity, particularly for those who are LGBTQ+. Adults who identified as LGBTQ+ during adolescence do not differ from heterosexual youth in the average timing of their first romantic relationship; however, those who do not identify as a sexual minority until adulthood do experience a delay in timing compared to their straight peers (Mernitz et al., 2023).

Young adults who for various reasons do not want to be in a serious relationship find that "singlehood is a source of happiness, well-being, and positive adjustment." (Watkins et al., 2024). Many (34 percent of men and 43 percent of women) are not interested in dating (Cox, 2023). And given that our developmental pathways become more varied with age, it is not reasonable to expect all adults of any age to follow the same path. Both single and partnered young adults who are satisfied with their current relationship status have above-average self-esteem, and age of first romantic relationship is unrelated to self-esteem (Gonzalez Avilés et al., 2023).

For those looking for a partner, about one-third say they are having trouble finding someone (Cox, 2023). People generally gravitate towards those who are similar to them in things like values, personality features, interests, and in romantic relationships, the preference for those who are similar is called **homogamy**. Beyond similar values, young adults also prioritize traits such as faithfulness, intelligence, sense of humor, and physical attractiveness in romantic mates, although men place higher value on physical attractiveness than

women (Bleske-Rechek & Ryan, 2015; Eastwick et al., 2014).

Settings where you might regularly see someone and have something in common were identified as the most promising in-person environments for finding long-term love, with classes, organizations such as volunteer groups, religious services, and the workplace rated highest. For short-term hookups, young adults identified more temporary social settings, with bars, clubs, and parties rated the most likely environments (Jonason et al., 2015). Just over half of all young adults say they have also used dating apps, but more than half of women report having negative experiences, including being overwhelmed by the number of messages they get and not feeling safe, though perceived safety is higher for young adults than older adults. Only 20 percent of young adults say they found their current romantic partner online, but those with an LGBTQ+ identity are almost three times more likely than straight young adults to have done so (Cox, 2023; Vogels & McClain, 2023).

Regardless of how they meet, most young adults use technology such as texting and social media to maintain their relationships (Basting et al., 2023). Although these avenues can increase positive relationship behaviors such as communication, connection, and sharing, they can also lead to negative outcomes, such as miscommunication, monitoring, and controlling (Basting et al., 2023; Vaterlaus et al., 2018). Interviews with adults ages eighteen and twenty-five years found that romantic partners who engage in "excessive contact" or expect "constant communication" can interfere with and distract from daily tasks. These problems were often accompanied by aggressive responses to perceived lapses in communication, as well as controlling and stalking the partner's social media use (Basting et al., 2023).

LINK TO LEARNING

Looking for advice on how to best navigate the role of technology in your close relationships? Read these tips for achieving a healthy balance of technology in your relationships (https://openstax.org/r/104TechBalance) to learn more.

The most fulfilling romantic relationships for young adults, regardless of their sexual orientation, are characterized by intimacy, passion, and commitment (Bauermeister et al., 2011). Such relationships can vary based on the extent of their positive qualities (such as support, disclosure, and affection), negative qualities (such as control and criticism), duration, shared resources, and commitment. Based on these dimensions, Beckmeyer and Jamison (2021) identified five romantic relationship typologies among young adults. Many were "happily consolidated" couples (31 percent), in committed and successful long-term relationships. However, 23 percent were in long-term "stuck relationships." Despite sharing resources such as by cohabitating, these couples reported more negative than positive qualities in their situation and had a pessimistic outlook on their future. Twenty percent of young adults were experiencing "happily independent" relationships characterized by many positive qualities but had not been together long enough to consolidate resources, such as a shared home. They usually had an optimistic outlook on their future (Figure 12.25).

FIGURE 12.25 Most young adults couples are happy and optimistic about their future. (credit: "LGBT Love" by Nehemiah Brent/nappy, Public Domain)

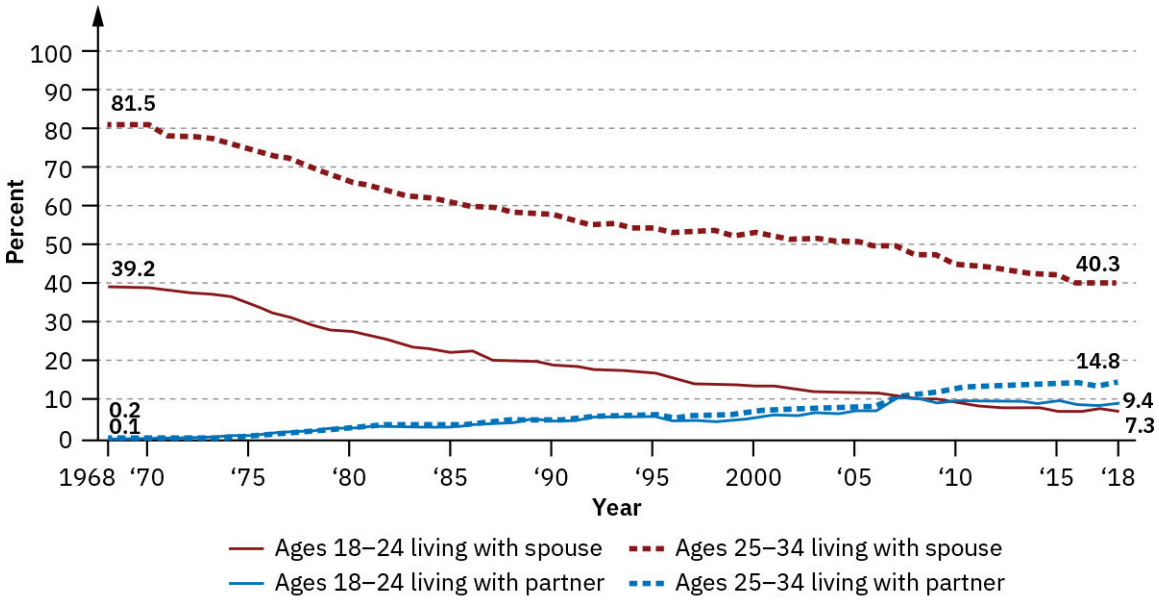
"Exploratory relationships" described 18 percent of couples, who were usually at the beginning of their relationship and casually dating. The least common relationships consisted of "high intensity" couples. Despite having a lot of consolidated resources and high commitment to each other, high-intensity couples experience both highs and lows as they cycle unpredictably between positive behaviors like warmth and support and negative behaviors like criticism and antagonism. Yet they reported the highest life satisfaction among all five typologies, as well as the highest level of depressive symptoms and heavy drinking. This research highlights the wide variation in romantic experiences and trajectories young adults experience as they navigate their intimate relationships.

Forming a Family

Young adults also begin to form or extend their families in different ways, such as by cohabitating, getting married, and becoming parents.

Cohabitation

By the end of young adulthood in their late twenties, one-quarter of all unmarried U.S. adults are cohabitating with a romantic partner, and the likelihood of progressing to this arrangement does not differ by sexual orientation (Julian, 2022; Orth & Rosenfeld, 2018). More young U.S. adults today are cohabiting with a romantic partner than with a spouse (Figure 12.26) (Gurrentz, 2018). Two reasons for this difference are that young adults are entering their first marriage at a later age (twenty-eight years for women and thirty years for men), and that the overall marriage rate is decreasing (Brown & Sheffield, 2020). As a result, most people now are accepting of living with a romantic partner outside marriage, especially young adults.



Source: Gurrentz, B. (2018). Living with an unmarried partner now common for young adults. U.S. Census Bureau.

FIGURE 12.26 As the median age of first marriage increases, the percentage of unmarried young adults cohabitating with a romantic partner is increasing, while the percent who are living with a spouse is decreasing. (data source: Gurrentz, 2018; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Like married couples, most cohabitating couples cite love, companionship, and commitment as the primary reasons for living with one another. However, those who cohabitate are more likely than married couples to also cite financial reasons and convenience as motivators. Cohabitation is also seen by some as a way to "test the relationship" before marriage. And while most unmarried couples who are living together trust one another to be faithful and truthful, most do not trust their partner to handle money responsibly.

Marriage

Married and unmarried couples report similar levels of satisfaction with their sex lives, but married couples are more satisfied with each other's communication and approach to parenting, and with their mutual work-life balance and division of household chores. Married people are also more likely to say they are closer to their partner than to any other adult (Menasce Horowitz et al., 2019). However, these responses do not reflect the duration of the relationship. The average length of cohabitation for unmarried couples is only eighteen months, compared to the average length of first marriages, which is eight years (Taibbi, 2023; VanOrman, 2020). The stability of cohabitating partners is the same for same-sex and heterosexual couples (Ketcham & Bennett, 2019).

By the end of young adulthood, only 32 percent of women and 23 percent of men are married (Brown & Manning, 2021) (Figure 12.27). Young adult attitudes and expectations regarding marriage vary geographically. Those living in rural areas are more likely to get married earlier and to view marriage as the natural and expected next step in a long-term relationship. Urban young adults are more likely to view marriage as a step that must be planned and delayed until other adult tasks, such as higher education, career development, and independent living can be completed (Swartz et al., 2017).

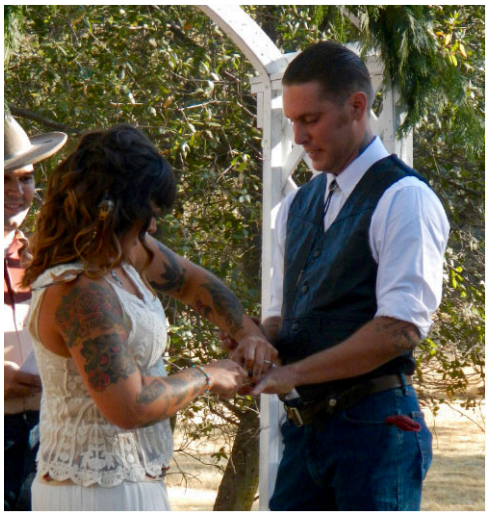


FIGURE 12.27 By the end of young adulthood, only 32 percent of women and 23 percent of men are married. (credit: modification of work "Exchange Rings" by "PunkToad"/Flickr, CC BY 2.0)

Parenthood

Only 13 percent of U.S. adults are parents by age twenty-four years, and 45 percent by age twenty-nine years (Martinez & Daniels, 2023). Like other developmental transitions, the experience of becoming a parent in young adulthood depends somewhat on contextual factors that influence a young person's perceived social clock. The median age of first birth for U.S. women is now thirty years old (Morse, 2022), but it does vary by ethnicity and education level (Shaeffer & Aragão, 2023; Martinez & Daniels, 2023). Black young adults and those with low income are more likely to view the transition to parenthood as a sign of adult maturity and a way to develop a sense of purpose (Edin & Kefalas, 2011; Rackin & Gibson-Davis, 2017).

Adjusting to parenthood can be difficult, however. It can reduce relationship satisfaction as well as young adults' self-control and emotional regulation, which is associated with an increase in instances of hostility and disagreement between new parents (Bogdan et al., 2022; Grolleman et al., 2022; van Scheppingen et al., 2018). About half of young adult parents experience stress over balancing their roles at work and within the family, and women report more stress than men (Allen et al., 2020), likely due to the heightened role expectations of new motherhood. All relationships, including those between parents, have good days and bad days, and the self-esteem of new parents has been shown to vary with changes in their daily interactions (Figure 12.28). On good days when new parents are more satisfied with their relationship and the responsiveness of their partner, their self-esteem rises. On bad days, it drops (Willms et al., 2023).

FIGURE 12.28 Thirteen percent of U.S. adults are parents by age twenty-four years, and 45 percent by age twenty-nine years (Martinez & Daniels, 2023). The everyday reality of parenting has ups and downs and can be both

challenging and rewarding. (credit: modification of work "Father and son" by "Yemster"/nappy, Public Domain)

While it can be a mixed experience, most young adults say they do eventually want to become parents. However, 16 percent say they do not want or expect to have children. For some (56 percent) this is a personal preference, while others cite concerns such as medical and financial reasons or the state of the world and the environment (Brenan, 2023; Brown, 2021).

References

Allen, A. L., Manning, W. D., Longmore, M. A., & Giordano, P. C. (2020). Young adult parents' work–family conflict: The roles of parenting stress and parenting conflict. In S. L. Blair, & R. P. Costa (Eds.), Transitions into parenthood: Examining the complexities of childrearing, Volume 15 (pp. 1–16). Emerald Publishing. http://dx.doi.org/10.1108/S1530-353520190000015001

Bakken, L., & Huber, T. (2005). Ego development at the crossroads: Identity and intimacy among Black men and White women in cross-racial relationships. *Journal of Adult Development, 12*(1), 63–73. http://dx.doi.org/10.1007/s10804-005-1322-1

Basting, E. J., Munshi, I., Harangozo, J., Dongarra, M. S., & Goncy, E. A. (2023). When does technology use within dating relationships cross the line? A thematic analysis of semistructured interviews with young adults. Psychology of Violence, 13(6), 488–496. https://doi.org/10.1037/vio0000479

Bauermeister, J. A., Johns M. M., Pingel E., Eisenberg A., Santana, M. L., & Zimmerman M. (2011). Measuring love: Sexual minority male youths' ideal romantic characteristics. *Journal of LGBT Issues in Counseling*, 5(2), 102–121. https://doi.org/10.1080/15538605.2011.574573

Beckmeyer, J. J. & Jamison, T. B. (2021). Identifying a typology of emerging adult romantic relationships: Implications for relationship education. *Family Relations, 70*(1), 305–318. https://doi.org/10.1111/fare.12464

Beyers, W., & Seiffge-Krenke, I. (2010). Does identity precede intimacy? Testing Erikson's theory on romantic development in emerging adults of the 21st century. *Journal of Adolescent Research, 25*(3), 387–415. https://doi.org/10.1177/0743558410361370

Bisson, M. A., & Levine, T. R. (2009). Negotiating a friend with benefits relationship. *Archives of Sexual Behavior*, *38*(1), 66–73. https://doi.org/10.1007/s10508-007-9211-2

Bleske-Rechek, A., & Ryan, D. E. (2015). Continuity and change in emerging adults' mate preferences and mating orientations. Personality and Individual Differences, 72, 90–95. https://doi.org/10.1016/j.paid.2014.08.033

Bogdan, I., Turliuc, M. N., & Candel, O. S. (2022). Transition to parenthood and marital satisfaction: A meta-analysis. *Frontiers in Psychology*, *13*, 901362. https://doi.org/10.3389/fpsyg.2022.901362

Brenan, M. (2023, September 25). *Americans' preference for larger families highest since 1971*. Gallup News. https://news.gallup.com/poll/511238/americans-preference-larger-families-highest-1971.aspx#:~:text=Bar%20chart%20showing%20parental%20status,8%25%20do%20not%20want%20children

Brown, A. (2021, November 19). *Growing share of childless adults in U.S. don't expect to ever have children*. Pew Research Center. https://www.pewresearch.org/short-reads/2021/11/19/growing-share-of-childless-adults-in-u-s-dont-expect-to-ever-have-children/

Brown, A. R. & Manning, W. D. (2021). Relationship status trends according to age and gender, 2019–2021. *Family Profiles*, *FP-21-25*. Bowling Green State University: National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-21-25

Brown, P. T., & Sheffield, R. (2020). U.S. marriage rates hit new recorded low. Joint Economic Committee of the United States Congress. https://www.jec.senate.gov/public/index.cfm/republicans/2020/4/marriage-rate-blog-test

Cox, D. A. (2023, February 9). *From swiping to sexting: The enduring gender divide in American dating and relationships*. Survey Center on American Life. https://www.americansurveycenter.org/research/from-swiping-to-sexting-the-enduring-gender-divide-in-american-dating-and-relationships/

Czyżowska, D., Gurba, E., Czyżowska, N., Kalus, A., Sitnik-Warchulska, K., & Izydorczyk, B. (2019). Selected predictors of the sense of intimacy in relationships of young adults. *International Journal of Environmental Research and Public Health*, *16*(22), 4447. https://doi.org/10.3390/ijerph16224447

Eastwick, P. W., Luchies, L. B., Finkel, E. J., & Hunt, L. L. (2014). The predictive validity of ideal partner preferences: A review and meta-analysis. Psychological Bulletin, 140(3), 623–665. https://doi.org/10.1037/a0032432

Edin, K., & Kefalas, M. (2011). *Promises I can keep: Why poor women put motherhood before marriage*. University of California Press. https://www.jstor.org/stable/10.1525/j.ctt1pnmxt

Erikson, E. H. (1982). *The life cycle completed: A review.* Norton.

Gilligan, C. (1982). *In a different voice.* Harvard University Press. https://psycnet.apa.org/record/1993-98550-000

Gonzalez Avilés, T., Borschel, E., Pusch, S., & Neyer, F. J. (2023). Not all flowers bloom in April: Self-esteem development surrounding the first romantic relationship during adolescence and emerging adulthood. European Journal of Personality, 37(6), 633–648. https://doi.org/10.1177/08902070221124723

Grolleman, J.F., Gravesteijn, C. & Hoffenaar, P.J. (2022). Trajectories of change in parental self-esteem and emotion regulation from pregnancy until 4 years postpartum. *Journal of Child & Family Studies, 32*, 1088–1101. https://doi.org/10.1007/s10826-022-02306-0

Gurrentz, B. (2018, November 15). *Living with an unmarried partner now common for young adults.* U.S. Census Bureau. https://www.census.gov/library/stories/2018/11/cohabitation-is-up-marriage-is-down-for-young-adults.html

Haydon, K. C., Collins, W. A., Salvatore, J. E., Simpson, J. A., & Roisman, G. I. (2012). Shared and distinctive origins and correlates of adult attachment representations: The developmental organization of romantic functioning. Child Development, 83(5), 1689–1702. https://doi.org/10.1111/j.1467-8624.2012.01801.x

Hazan, C., Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511–524. https://doi.org/10.1037/0022-3514.52.3.511

Jonason, P. K., Foster, J. D., McCain, J., & Campbell, W. K. (2015). Where birds flock to get together: The who, what, where, and why of mate searching. *Personality and Individual Differences, 80*, 76–84, https://doi.org/10.1016/j.paid.2015.02.018

Jovanovic, J., & Williams, J. C. (2018). Gender, sexual agency, and friends with benefits relationships. *Sexuality & Culture: An Interdisciplinary Quarterly*, *22*(2), 555–576. https://doi.org/10.1007/s12119-017-9483-1

Julian, C. A. (2022). Cohabitation among young adults. *Family Profile, FP-22-29.* Bowling Green State University: National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-22-29

Kerpelman, J. L., Pittman, J. F., & Adler-Baeder, F. (2008). Identity as a moderator of intervention-related change: Identity style and adolescents' response to relationships education. *Identity, 8*(2), 151–171. https://doi.org/10.1080/15283480801940073

Ketcham, E., & Bennett, N. G. (2019). Comparative couple stability: Same-sex and male-female unions in the United States. *Socius, 5*. https://doi.org/10.1177/2378023119829312

Korobov, N., & Thorne, A. (2006). Intimacy and distancing: Young men's conversations about romantic relationships. *Journal of Adolescent Research, 21*(1), 27–55. https://doi.org/10.1177/0743558405284035

Kroger, J. (2015). Identity development through adulthood: The move toward "wholeness." In K. C. McLean & M. Syed (Eds.), *The Oxford handbook of identity development* (pp. 65–80). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199936564.013.004

Machia, L. V., Proulx, M. L., Ioerger, M., & Lehmiller, J. J. (2020). A longitudinal study of friends with benefits relationships. Personal Relationships, 27(1), 47–60. https://doi.org/10.1111/pere.12307

Martinez, G. M., & Daniels, K. (2023). Fertility of men and women aged 15–49 in the United States: National survey of family growth 2015–2019 (National Health Statistics Report No. 179). Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. https://www.cdc.gov/nchs//data/nhsr/nhsr179.pdf

Menasce Horowitz, J., Graf, N., & Livingston, G. (2019, November 6). Marriage and cohabitation in the U.S. Pew Research Center. https://www.pewresearch.org/social-trends/2019/11/06/marriage-and-cohabitation-in-the-u-s/

Mernitz, S., Hsu, J., & Bishop, M. D. (2023). Timing to a first relationship among youth: Variability by sexual orientation development. *Journal of Social and Personal Relationships, 40*(11), 3703–3722. https://doi.org/10.1177/02654075231185763

Mongeau, P. A., Knight, K., Williams, J., Eden, J., & Shaw, C. (2013). Identifying and explicating variation among friends with benefits relationships. *Journal of Sex Research, 50*(1), 37–47. https://doi.org/10.1080/00224499.2011.623797

Montgomery, M. J. (2005). Psychosocial intimacy and identity: From early adolescence to emerging adulthood. *Journal of Adolescent Research, 20*(3), 346–374. https://doi.org/10.1177/0743558404273118

Morse, A. (2022, April 6). *Stable fertility rates 1990–2019 mask distinct variations by age.* U.S. Census Bureau. https://www.census.gov/library/stories/2022/04/fertility-rates-declined-for-younger-women-increased-for-older-women.html?utm_campaign=20220406msacos1ccstors&utm_medium=email&utm_source=govdelivery

Norona, J. C., Olmstead, S. B., & Welsh, D. P. (2017). Breaking up in emerging adulthood: A developmental perspective of relationship dissolution. *Emerging Adulthood, 5*(2), 116–127. https://doi.org/10.1177/2167696816658585

Orth, T., & Rosenfeld, M. (2018). Commitment timing in same-sex and different-sex relationships. *Population Review, 57*(1). https://doi.org/10.1353/prv.2018.0000

Rackin, H. M., & Gibson-Davis, C. M. (2017). Low-income childless young adults' marriage and fertility frameworks. *Journal of Marriage and the Family*, *79*(4), 1096–1110. https://doi.org/10.1111/jomf.12405
Rauer, A. J., Pettit, G. S., Lansford, J. E., Bates, J. E., & Dodge, K. A. (2013). Romantic relationship patterns in young adulthood and their developmental antecedents. Developmental Psychology, 49(11), 2159–2171. https://doi.org/10.1037/a0031845
Rudolph, K. D., & Dodson, J. F. (2022). Gender differences in friendship values: Intensification at adolescence. *The Journal of Early Adolescence, 42*(4), 586–607. https://doi.org/10.1177/02724316211051948
Shaeffer, K., & Aragão, C. (2023, May 9). *Key facts about moms in the U.S.* Pew Research Center. https://www.pewresearch.org/short-reads/2023/05/09/facts-about-u-s-mothers/#:~:text=In%202021%2C%20the%20average%20woman,for%20Disease%20Control%20and%20Prevention
Sharabany, R. (1994). Intimate Friendship Scale: Conceptual underpinnings, psychometric properties and construct validity. *Journal of Social and Personal Relationships, 11*(3), 449–469. https://doi.org/10.1177/0265407594113010
South, S. J., & Lei, L. (2021). Why are fewer young adults having casual sex? *Socius*, *7*. https://doi.org/10.1177/2378023121996854
Swartz et al., 2017
Taibbi, R. (2023, April 8). *Why so many marriages end after eight years*. Psychology Today. https://www.psychologytoday.com/us/blog/fixing-families/202304/why-do-so-many-couples-divorce-after-8-years
VanOrman, A., & Jacobsen, L.A. (2020, February 12). *U.S. household composition shifts as the population grows older; More young adults live with parents*. Population Reference Bureau.
https://www.prb.org/resources/u-s-household-composition-shifts-as-the-population-
grows-older-more-young-adults-live-with-parents/
van Scheppingen, M. A., Denissen, J. J. A., & Bleidorn, W. (2018). Stability and change in self-control during the transition to parenthood. European Journal of Personality, 32(6), 690–704. https://doi.org/10.1002/per.2172
Vaterlaus, J. M., Tulane, S., Porter, B. D., & Beckert, T. E. (2018). The perceived influence of media and technology on adolescent romantic relationships. Journal of Adolescent Research, 33(6), 651–671. https://doi.org/10.1177/0743558417712611
Vogels, E.A., & McClain, C. (2023, February 2). Key findings about online dating in the U.S. Pew Research Center. https://www.pewresearch.org/short-reads/2023/02/02/key-findings-about-online-dating-in-the-u-s/
Waters, T. E. A., Raby, K. L., Ruiz, S. K., Martin, J., & Roisman, G. I. (2018). Adult attachment representations and the quality of romantic and parent–child relationships: An examination of the contributions of coherence of discourse and secure base script knowledge. Developmental Psychology, 54(12), 2371–2381. https://doi.org/10.1037/dev0000607
Watkins, N. K., Beckmeyer, J. J., & Jamison, T. B. (2024). Exploring the associations between being single, romantic importance, and positive well-being in young adulthood. *Family Relations*, *73*(1), 484–501. https://doi.org/10.1111/fare.12981
Willms, J., Weber, E., van Scheppingen, M., & Bleidorn, W. (2023). Daily self-esteem and relationship quality in first-time parents. *Journal of Research in Personality, 105*, https://doi.org/10.1016/j.jrp.2023.104395

Key Terms

autonomous interdependence according to Selman, adult stage of friendship in which friends appreciate and respect each other's individuality and identity while also relying on each other for support

homogamy preference for forming romantic relationships with those who are similar to us

intergenerational solidarity closeness among family generations promoted by frequent interaction, expressions of affection, alignment of values and beliefs, provision of help, proximity to each other, and shared norms and traditions

intersectionality framework to understand how people experience multiple aspects of their identity simultaneously

intimacy versus isolation according to Erikson's theory of psychosocial development, the early adulthood challenge to establish close and trusting relationships with others

maturity principle of personality development increase or decrease of certain traits with age to effectively adapt to the demands of development

mean-level change extent to which the level of a personality trait can fluctuate historically and over the lifespan

rank-order stability tendency for an individual's levels of personality traits compared to others to remain stable over time

self totality of all your personal characteristics, including the way you see yourself, represent yourself, and relate to others

self-determination theory theory that proposes that success and well-being are maximized when we are able to balance our needs for autonomy, competence, and relatedness

social clock cultural expectations about normative behavior and achievements that are associated with age

social investment theory of personality development idea that commitment to certain life roles predicts corresponding changes in personality traits to support the demands of these roles

trajectory predicted pathway of development, usually determined by the interaction of behaviors within context

work-life balance arrangement that allows a person to spend the desired amount of time on activities that are important to them such as work, leisure, education, and caregiving

Summary

12.1 The Development of Self in Early Adulthood

- Achievement of developmental tasks is affected by both individual priorities and cultural context.
- The modern world offers more connection and diversity but also greater economic difficulties, which can create both opportunities and challenges in completing developmental tasks. Feelings of helplessness or indecision known as the quarter-life crisis can be offset by self-reflection and perceived social support.
- A primary challenge of early adulthood is to establish close and trusting relationships with others. According to Erikson, intimacy requires both commitment and willingness to sacrifice and compromise.
- Valliant proposes that affiliation allows us to reduce the anxiety of developmental tasks by confiding in others and being willing to ask for and receive help.
- Levinson's seasons of life theory proposes that young adults develop mentoring relationships to support their emerging independence.
- Personality traits can both drive and direct the developmental tasks of early adulthood, while also adapting and responding to changing roles and responsibilities.

12.2 Identity Development in Context in Early Adulthood

- Early adulthood prompts reflection about the way identity domains align with each other and the person's changing contexts and priorities.
- Intersectionality refers to how people simultaneously experience multiple aspects of their identity and their associated privileges or discrimination.

- Young adults show more transition in their ethnoracial identity status than older adults. The salience, centrality, and regard for ethnoracial identity may change in response to early adult developmental transitions, especially for communities of color.
- Gender and sexual identity intersect with ethnoracial identity to produce a wide variety of developmental experiences. Compared to past generations, LGBTQ+ young adults are more likely to have explored their sexual identity earlier in life and come out at a younger age, but compared to straight young adults, they face greater challenges with regard to traditional expectations of marriage and parenthood.
- Gender, sexual, and ethnoracial identity are related to religious identity development. Christian religious identity has dropped substantially in the last fifty years, in part, because many disaffiliate with the religion by the end of young adulthood. There are also more U.S. adults who were raised unaffiliated with a particular religion.
- Young adults show increased exploration and information-seeking regarding their religious identity as they consider how their beliefs their align with their adult needs, values, and priorities. Overall religiosity does not change for most people as they progress from adolescence into early adulthood.

12.3 Relationships with Friends and Family in Early Adulthood

- According to self-determination theory, well-being is maximized when needs for autonomy, competence, and relatedness are met.
- Friends in early adulthood can facilitate self-determination by valuing each other's individuality and identity while also providing support to achieve goals. Selman called this stage of friendship autonomous interdependence.
- In the United States, families are the primary support for emerging adults. The decision about whether, when, and why to move out of their parents' home is affected by culture, education, financial considerations, and responsibilities.
- After young adult children have moved out, their relationship with their parents varies individually and cross-culturally. Proximity between adult children and their parents is associated with increased contact and promotes intergenerational solidarity

12.4 Contexts: School and Work Settings in Early Adulthood

- Young adults follow a variety of pathways after high school, including starting a family, undertaking vocational training, accepting full-time employment, enlisting in military service, and signing on for volunteer work or political activism. The choice of pathway is influenced by family and community background, SES, gender, and race.
- Young adults who choose college differ in how and when they complete degrees, including taking a gap year before starting, signing up for ROTC, and enrolling full or part time.
- The best preparation for likely career changes during adulthood is to develop transferable professional skills, including communication, problem-solving, and collaboration.
- According to Super's lifespan theory of career development, adult career trajectory evolves from exploration in emerging adulthood to establishment in early to middle adulthood (Super, 1990).
- Those who establish themselves in good jobs are more likely to take a strategic approach to career development, using entry-level jobs to develop skills, knowledge, and connections to advance.
- As young adults take on more responsibilities, they need to maintain a balance among the activities that matter to them, such as work, leisure, education, and caregiving.

12.5 Finding Love, Intimacy, and Romance in Early Adulthood

- Identity development in adolescence and emerging adulthood predicts subsequent intimacy and romantic partnership quality in early adulthood. High-quality intimate relationships are characterized by frankness and spontaneity, sensitivity and knowing, exclusivity, giving and helping, imposing and taking, common activity, trust and loyalty, and secure attachment.
- Rates of casual sex are fairly low among young adults. A FWBR can provide a safe, familiar, and convenient

context to explore sexual or romantic feelings with another person, but it usually does not result in long-term friendships or romantic relationships.
- About half of young adults are single, and being single by choice can be a source of happiness and well-being.
- Young adults seek homogamy, faithfulness, intelligence, sense of humor, and physical attractiveness in romantic partners, and they meet potential partners in a variety of in-person and online settings.
- Most young adults use technology such as texting and social media to maintain their relationships, which can increase both positive and negative relationship behaviors.
- The experiences and trajectories of young adult romantic experiences differ widely. Most couples are happy, but the extent of commitment varies.
- More young adults are cohabiting than in the past, and by the end of young adulthood most are not married.
- The likelihood of becoming a parent in young adulthood depends on contextual factors that influence a young person's social clock. Adjusting to parenthood can bring a mix of positive and negative experiences.

Review Questions

1. What are the cultural expectations about normative behavior and achievements associated with age, such as starting a career or having a first child, influenced by?
   a. rank-order stability
   b. mean-level change
   c. the maturity principle
   d. the social clock

2. What theory predicts that when young people commit to certain life roles such as spouse or store assistant manager, corresponding changes in personality traits to support the demands of these roles will occur?
   a. the maturity principle
   b. social investment theory
   c. the quarter-life crisis
   d. rank-order stability

3. What age range was theorized to serve as a "second adulthood" for women by write Gail Sheehy?
   a. ages 20 to 30
   b. ages 30 to 40
   c. ages 40 to 50
   d. ages 50 to 60

4. Studies using Marcia's identity status have consistently found that identity commitment was most strongly encouraged by which life event?
   a. graduating from college
   b. becoming a parent
   c. getting married
   d. starting a career

5. The relevance of a person's identity in a particular situation is called identity _____.
   a. salience
   b. regard
   c. diffusion
   d. moratorium

6. What term describes the overlapping experience of different aspects of our identity, such as ethnicity,

gender, and sexuality?
a. intersectionality
b. identity confusion
c. identity centrality
d. moratorium-achievement-moratorium-achievement (MAMA) cycle

7. For British families, what is the most common expected reason for young adults to leave the parental home?
a. employment or education opportunities
b. marriage and plans for parenthood
c. financial independence
d. conflict in the home of origin

8. In early adulthood, friendship networks usually
a. expand
b. shrink
c. do not change in size
d. become irrelevant

9. What is the most common source of disagreement between young adults and their parents?
a. parents' retirement plans, including moving homes
b. parents' religion and their insistence on the child maintaining those beliefs
c. emerging adult's sexual orientation or romantic relationships
d. emerging adult's financial decisions

10. Developmental trajectories are determined by the interaction of
a. family and friends
b. friends and neighbors
c. behavior and context
d. attitude and personality

11. According to Super's lifespan theory of career development, what occurs in early adulthood?
a. Career exploration is followed by career establishment.
b. Career establishment is followed by career exploration.
c. College students should choose a major aligned with their career goals.
d. Intimacy should be developed before vocational identity.

12. Life balance is the extent to which a person feels able to _____.
a. maintain their identity within intimate relationships
b. live independently
c. find a job aligned with their education
d. spend the desired amount of time on activities that matter

13. Research on the relationship between identity and intimacy in modern young adults finds that which of the following is true?
a. Intimacy predicts the development of identity for people of any sex.
b. Identity predicts the development of intimacy for people of any sex.
c. Intimacy predicts the development of identity, but only for men.
d. Identity predicts the development of intimacy, but only for women.

14. What contextual factor can make it more likely that a person will get married earlier in young adulthood?
   a. having a high level of education
   b. being career-focused
   c. living in a rural area
   d. being non-heterosexual

15. Which trend with regard to cohabiting with a romantic partner to whom one is not married is true?
   a. More young adults now live with a cohabiting romantic partner than live with a spouse.
   b. Cohabitation is far more common among the LGBTQ+ population than among those who identify as heterosexual.
   c. Cohabitation becomes less common as people increase in their financial income and socioeconomic status.
   d. People who are very religious are more likely to cohabit as a "test for marriage and hedge against divorce" than those who are not.

Check Your Understanding Questions

16. Explain the difference between rank-order stability of personality traits and mean-level change in personality traits.

17. Describe how writer Gail Sheehy's approach in her second book *New Passages* differed from that in her first book *Passages*.

18. Describe two ways in which the experience of identity development may vary according to a person's ethnicity.

19. Describe two reasons why the number of adults identifying as Christian has decreased over the last fifty years.

20. Identify one potential challenge and one potential benefit of a cross-ethnic friendship.

21. Describe what "intergenerational solidarity" means in family relationships.

22. Identify two reasons why young adults in rural areas might decide not to attend college.

23. Identify one predictor and one outcome each for rapid college completers and marginal college goers.

24. Identity one contextual factor and one behavior that predicts a trajectory to a "good job."

25. Identify the characteristics of intimate relationships outlined by Sharabany, and describe the positive outcomes of secure attachment in a romantic relationship.

26. Contrast the "high-intensity" and "happy independent" relationship typologies identified by Beckmeyer and Jamison.

27. Identify three in-person settings where young adults say they have the best chance of meeting a long-term romantic partner. What do these settings have in common, and why do you think young adults feel they have the most potential for finding long-term romantic connections?

Personal Application Questions

28. Reflect on a major life change you've experienced during early adulthood, such as leaving home, entering college, or starting a job. How did this event shape your sense of independence and self-identity?

29. Think about the cultural expectations of success in your community. How have these expectations influenced your goals in early adulthood, and how do they compare with the developmental tasks identified by psychologists like Arnett?

30. Consider how your personality has evolved since entering adulthood. Have you noticed changes in traits like openness, conscientiousness, or emotional stability? Describe any specific events or experiences that may have contributed to these changes.

31. Reflect on a time when you had to make a significant life decision (e.g., related to career, relationships, education). How did you navigate the process of exploration and commitment, as described in Marcia's identity framework? Would you say you experienced moratorium, foreclosure, diffusion, or achievement during that period? Explain why.

32. Consider the multiple aspects of your identity (ethnicity, gender, sexuality, religion). How have these aspects intersected in different environments (e.g., school, work, social settings), and how has this shaped your overall identity? Can you identify a specific moment where intersectionality impacted your sense of self?

33. Think about the development of your ethnoracial identity or the identity of someone you know. Has there been a time when your understanding or regard for this aspect of your identity changed in early adulthood? What factors influenced this change?

34. Reflect on your gender or sexual identity and how it has evolved over time. Has your exploration of these identities changed as you have entered new environments or taken on new roles? How does your gender or sexual identity intersect with other aspects of who you are (e.g., cultural, religious identity)?

35. Reflect on your current social context. How do your relationships with friends and family help you navigate your emerging independence? Provide an example of how these relationships have supported or challenged your autonomy or personal development.

36. Friendships during early adulthood are described as becoming more interdependent. Think about a close friendship you have in your life. In what ways does this friendship help you meet your needs for relatedness, autonomy, and competence? How has this friendship changed over time?

37. Consider your relationship with your family as you move or have moved through early adulthood. In what ways has your relationship with your parents or other family members changed since you entered adulthood? How have these changes impacted your personal goals or sense of independence?

38. Reflect on a life transition you've experienced, such as starting college, entering the workforce, or moving out of your family home. How did this transition affect your friendships or family relationships? Did you rely more on friends or family for support during this time, and why?

39. Reflect on the decisions you have made about your education and work since high school. What factors, such as family, community, or personal interests, have influenced your choices? How have these decisions shaped your current or future career trajectory?

40. Consider your educational pathway. If you are attending or have attended college, how did your experience differ from or align with your expectations? If you pursued an alternative pathway, such as vocational training or employment, how has this decision impacted your career and personal development?

41. Think about your career exploration in early adulthood. Have you participated in internships, part-time jobs, or volunteer work that influenced your career goals? How did these experiences contribute to your understanding of the career paths available to you, and how have they shaped your aspirations?

42. Reflect on how you balance your work, education, and personal life. Do you feel that you have achieved a satisfying work-life balance? If not, what changes could help you better manage your time and responsibilities? How do you prioritize the different aspects of your life, such as work, family, education, and leisure?

43. Reflect on your journey of developing your personal identity. How has your sense of self impacted your ability to form close, intimate relationships? Provide an example of a friendship or romantic relationship

where your sense of identity influenced your connection with the other person.

44. Think about a close intimate relationship you have or have had, whether romantic or platonic. How does this relationship reflect the characteristics of intimacy as described in the text (e.g., trust, loyalty, sensitivity)? What have you learned about yourself through this relationship?

45. Consider the process of establishing and maintaining a romantic relationship. Reflect on a relationship (past or present) in which you were trying to navigate compatibility, personal needs, and commitment. What strategies did you use to maintain this relationship, and how successful were they?

46. Reflect on your views about starting a family. What factors influence your current thoughts or decisions about family formation, such as cohabitation, marriage, or parenthood? How have societal or cultural expectations shaped your perspective?

Essay Questions

47. Reflect on the concept of emerging adulthood and the developmental tasks associated with this stage, as outlined by Jeffrey Arnett. Using your own experience or examples from someone you know, describe how at least two developmental tasks (e.g., entering the workforce, starting a relationship, or leaving home) have contributed to the development of independence and the sense of self during early adulthood.

48. Describe the Five-Factor Model of personality (OCEAN) and explain how certain personality traits may evolve during early adulthood. Provide examples from your own life or someone you know of how at least two traits (e.g., openness, conscientiousness) have changed in response to significant life events during early adulthood.

49. How can Marcia's four identity statuses (moratorium, foreclosure, diffusion, and achievement) be applied to identity development in early adulthood? Provide specific examples of how young adults may experience each of these statuses across different areas of life, such as career, relationships, or education. You should also reflect on a personal experience (or an observed one) that aligns with one of these statuses.

50. Discuss the concept of intersectionality and how it applies to the development of identity in early adulthood. Provide examples of how different aspects of identity (e.g., race, gender, sexuality, and religion) intersect and influence each other. How might these intersections create unique challenges or opportunities for identity exploration? You should also reflect on how intersectionality has impacted your own identity development or that of someone you know.

51. Explain the role of social contexts for the developing individual in early adulthood by examining the balance between autonomy and relatedness. Use examples from your own life, or the life of someone you know, to illustrate how friendships or family relationships can support or challenge this balance.

52. Analyze how moving out of the parental home affects the parent-child relationship. Compare and contrast the experiences of individuals from different cultural or socioeconomic backgrounds. Provide examples to support your analysis.

53. Developmental trajectories are shaped by the interaction between behavior and context. Using examples from your own life, discuss how your behavior (e.g., decisions regarding education, work, or personal development) and the context (e.g., family background, socioeconomic status, or geographic location) have interacted to influence your current developmental trajectory. How do these factors work together to impact your future career or educational outcomes?

54. Erikson's theory of psychosocial development states that identity development is crucial before a person can achieve true intimacy in relationships. In your essay, explain how identity and intimacy are interconnected during early adulthood. Use examples from your own experience or observations of others to illustrate how the development of a strong sense of self can impact the ability to form intimate

relationships.

55. Many young adults face important decisions regarding family formation, including cohabitation, marriage, and parenthood. In your essay, analyze how societal expectations, cultural values, and personal goals influence these decisions. Provide examples to support your discussion, including factors such as socioeconomic status, education, or personal beliefs.

Physical and Cognitive Development in Middle Adulthood (Ages 30 to 59)

13

FIGURE 13.1 Physical and cognitive wellness in middle adulthood is maintained by activities that promote healthy life balance. (credit: modification of work "Walking The Dog Turku Finland Color Street Photography" by Giuseppe Milo/Wikimedia Commons, CC BY 3.0)

CHAPTER OUTLINE

13.1 Physical Development in Middle Adulthood
13.2 Reproductive and Sexual Changes in Middle Adulthood
13.3 Cognition in Middle Adulthood
13.4 Maintaining Health and Well-Being in Middle Adulthood

WHAT DOES PSYCHOLOGY SAY? It's Bert's first day as a driver for a national delivery company. He was getting burned out in his previous job at the distribution warehouse, so he is excited about this new position that comes with better pay and hours. He's good at reading and understanding the route map for deliveries, especially now that he has new reading glasses, but he finds the GPS alerts distracting. He also feels the stress of learning new responsibilities, and he misses the exercise of walking around and lifting items at the warehouse. Luckily, this new delivery job offers more free time to walk his dog and play softball with friends, and it will provide more opportunities to save for retirement. Bert's even had time in the morning to blend smoothies to take along on his route, which his doctor suggested as part of a healthy diet. Bert finds that focusing on those benefits helps him to adopt a positive mindset and sleep better at night. He is hopeful about navigating other changes to come in this stage of life.

Bert has concerns and questions about middle adulthood that many share, including:

- How does the brain function differently at this life stage than at younger ages?
- Is it better for life satisfaction to stay in one job or workplace, or to look for new opportunities?

- Is it true that forgetfulness increases in middle age?
- How do the changes of middle adulthood affect overall well-being?
- How do people at this life stage balance work and leisure?
- What are the most important benefits of regular exercise, a healthy diet, sleep, and a positive mindset in middle adulthood?

In this chapter, you will learn about the changes in physical and cognitive development that occur during middle adulthood, including how those changes impact well-being at this time of life.

13.1 Physical Development in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the difference between primary and secondary aging
- Identify changes in perception, memory, and information processing during middle adulthood
- Identify key changes in sensory abilities across middle adulthood
- Describe physical changes to the body across middle adulthood

At forty-six years old, quarterback Tom Brady announced his retirement after spending over twenty years as a top player in the NFL. He retired as the number one quarterback in NFL history, but what is perhaps most amazing about his career is how he continued to develop physically after entering middle adulthood. Tom Brady won four of his seven Super Bowl Championships and three of his five Super Bowl MVP awards after thirty years of age, and actually became a faster athlete in certain measures. Tom credits a healthy daily diet and exercise routine with maintaining physical ability, mental sharpness, and energy well into middle adulthood. Even in retirement, he enjoys many activities like working out with friends and riding bikes with his children. He is also involved with community service organizations that help those in need, including the Make-A-Wish Foundation, the Boys & Girls Clubs of America, and Best Buddies International. Whereas Tom's physical achievements are by no means typical for his age, his dedication to work, family, personal wellness, and community service is an exceptional example of the developmental benefits of active engagement in middle adulthood (DeArdo, 2024; Patra, 2023; Petre & Knott, 2022).

Physical and cognitive changes in middle adulthood tend to be gradual, occurring over many years. The nearly thirty-year length of this life stage allows for a wide variety of developmental experiences, both within and between individuals. For example, some adults begin to show gray hair in their thirties, while others don't gray during this stage. These variations make it difficult to generalize about physical development in middle adulthood. Variation in human aging is largely explained by the interaction of our genetics with our experiences. Aging from inevitable and genetically influenced biological changes is known as **primary aging**. For example, with age, hair follicles naturally reduce their production of pigment, which results in graying hair. On the other hand, **secondary aging** results from the influence of environmental or behavioral factors, as opposed to genetic influences. For example, many signs of aging skin, such as wrinkles and changes in pigmentation, are caused by sun exposure.

Physical aging is an inevitable part of the human life cycle. The timing and experience of the related processes are improved for many adults by increasing healthy behaviors and having a positive mindset. Adults generally often adopt healthier eating behaviors with age (Whitehead, 2016), are less likely to experience mental illness (NIMH, 2021) during the period of middle adulthood compared to other periods of the lifespan. Individuals in middle adulthood also often develop more positive perceptions of aging by prioritizing their emotional and psychological goals (Carstensen & Mikels, 2005).

Changes in the Brain

Although the human brain does not physically grow in adulthood, its functions—like perception, memory, and information processing—continue to evolve. Some aspects stabilize and are indistinguishable from those of early adulthood, such as the ability to make and utilize mental images (Caçola et al., 2013). Researchers have

also identified changes in other areas of the brain during middle adulthood, some of which show improved functioning and some of which show decreased functioning.

Perception

The brain perceives and responds to emotional stimuli differently in middle adulthood. Findings suggest that compared to younger adults, middle-aged adults pay more attention to and recall positive stimuli, like a smiling infant or cute kittens, and show less amygdala reactivity (recall that the amygdala is the part of the brain that produces automatic fear and anger responses) when exposed to negative images, like a snarling dog or a gruesome injury (Charles et al., 2003; Mather et al., 2004) (Figure 13.2). This shift in attention to and processing of positive versus negative emotional information is called the positivity effect and may help promote psychological and emotional well-being (Carstensen, 2021; Carstensen & Reynolds, 2023). The positivity effect may also boost physical health, since positive affect has been found to predict healthy exercise behaviors in adulthood (Whitehead, 2016).

(a) (b)

FIGURE 13.2 When shown an array of photos that depict emotionally positive, neutral, and negative images, middle-aged adults pay more attention to positive images, such as (a) a cute kitten. They exhibit less amygdala reactivity as compared to young adults when shown negative images, such as (b) a snarling dog. (credit a: modification of work "Tabby cat with blue eyes" by Adina Voicu/Wikimedia Commons, CC0 1.0; credit b: modification of work "angry dog" by Stebunik/Wikimedia Commons, CC BY 3.0)

Memory and Information Processing

It is not uncommon to hear adults in middle age comment about becoming forgetful and even seeking out memory assessments. This perceived memory loss is not supported by research, however. No differences in memory are typically found between middle and young adults, and people in these developmental stages seem to generally function at the same level in terms of memory (Salthouse, 2012). It is more likely that perceived forgetfulness is a result of the cognitive overload associated with the responsibilities of parenting, looking after aging parents, maintaining a career, and so on (Mayo Clinic Health System, 2022).

One real change in brain processes in middle adulthood is a slower processing speed than at younger ages. Scientists gauge processing speed by measuring reaction time, such as how quickly a person presses a button on a keyboard when prompted. Adults also have more difficulty filtering distracting stimuli during a task (Kray et al., 2008) (Figure 13.3). In the brains of middle-aged adults, more areas of the cortex are activated in response to cognitive tasks than in younger adult brains (Gunter et al., 1998; Kwon et al., 2016). One explanation might be that ideas are being associated with greater memory context in older adults because of their life experience. For example, when shown random images as part of a memory task, middle-aged adults with more life experience might associate those random images with a broader network of personal memories than would a young adult. While this broader network activation may slow processing speed, it also likely enables more complex and nuanced problem-solving abilities. However, reduced processing speed may also be exacerbated by long-term health problems, such as diabetes (Tufvesson et al., 2013) or chronic pain (Rouch et al., 2021).

FIGURE 13.3 Middle-aged adults have more difficulty filtering distracting stimuli during a task, such as interruptions while working. (credit: modification of work "Man playing with dog" by Nehemiah Brent/nappy, Public Domain)

Brain Health

As general health concerns increase in midlife, many people wonder how to maintain brain health and prevent cognitive decline, dementia, or illnesses like Alzheimer's disease. Researchers have investigated the connection between brain health and various lifestyle factors, including diet, dental hygiene, exercise, and social engagement.

Some reports suggest moderate amounts of caffeine (two to three cups of coffee a day) are associated with lower risks of developing dementia (Zhang et al., 2021). However, high rates of caffeine consumption have been associated with increased rates of dementia and reduced hippocampal volume (Pham et al., 2021).

Potential benefits or risks of alcohol consumption vary: Moderate amounts (one to two drinks a day) may reduce dementia risk, whereas large amounts are associated with increased risk compared to nondrinking (Jeon et al., 2023). Recommendations about alcohol are complicated by the difficulty in pinpointing the exact level at which consumption becomes dangerous. As a result of this uncertainty, the World Health Organization (WHO) has published a statement that no level of alcohol consumption is deemed safe (WHO, 2023), as there is not a clear upper limit for healthy alcohol consumption.

The Mediterranean diet—high in fruit, vegetables, grains, and olive oil and low in red meat and processed foods—has also been associated with protecting healthy brain functioning. In particular, the brains of adults following this eating approach are less likely to exhibit the accumulation of plaques in the brain that lead to cognitive decline and Alzheimer's disease (Agarwal et al., 2023).

LINK TO LEARNING

Many aspects of the Mediterranean diet can be more affordable than less healthy food choices. For example, protein sources such as lentils and chickpeas are often cheaper than meat-based proteins. However, other food choices may be more costly, such as using olive oil instead of other sources of fat. Check out this article about more affordable ways to eat the Mediterranean way (https://openstax.org/r/104MediterEatng) to learn what to prioritize on your shopping list.

Researchers have investigated the connection between oral health and dementia risk. A study of more than 6,000 patient medical records revealed that adults with periodontal disease were more likely to be later diagnosed with dementia (Beydoun et al., 2020). Postmortem analyses of the brains of deceased individuals with dementia found higher levels of a type of bacteria associated with gingivitis. These bacteria can release an enzyme that damages nerve cells and causes symptoms of dementia and Alzheimer's disease. Although these

results are correlational rather than causal, researchers are examining how proactive oral care and treatments for bacterial infections in the mouth may reduce the risk of dementia (Dominy et al., 2019).

Staying or becoming physically active also benefits brain health. Cardiovascular exercise increases blood flow, which promotes the growth of capillary and neural networks in the brain (Konopka, 2015). Physical exercise has been associated with better cognitive function in both naturalistic and experimental settings. Older adults who exercise regularly perform better on tests of cognitive function than those who do not, even when controlling for other health and lifestyle factors (Kumar et al., 2022). Following a stroke, adults who participated in a thorough and progressive fitness program involving strength and aerobic exercises showed greater cognitive performance at a six-month follow-up than did those in low-intensity fitness programs (Liu-Ambrose et al., 2022).

Cohen (2004) proposes that strong social ties may deliver both direct and indirect benefits to adults' health. Social ties buffer against stress, and chronic stress has been found to cause changes in brain chemistry that eventually shrink structures of the brain involved in cognition, such as the hippocampus (Willner, 2017). Social participation may also encourage engagement in activities that promote brain and cognitive health, including physical and intellectual activity (Cohen, 2004).

Changes in Sensory Abilities

In addition to experiencing changes to how the brain perceives and processes information, people may notice changes in their sensory abilities during middle adulthood. Structural components of the eyes change, hearing acuity declines, and there are subtle changes to the sense of touch.

The eyes experience a loss of visual acuity in middle age, which is referred to as **presbyopia**. Two common issues arise: First, a thickening of the eye's lens reduces its elasticity, making it less likely to bend to accommodate targets closer to the eye. As a result, middle-aged adults often have trouble seeing up close and experience blurriness when reading, as shown in Figure 13.4. A second aspect of presbyopia is the buildup of yellowish extracellular debris that can cause age-related macular degeneration (AMD), a deterioration of the light receptors in the retina (Grossniklaus et al., 2013).

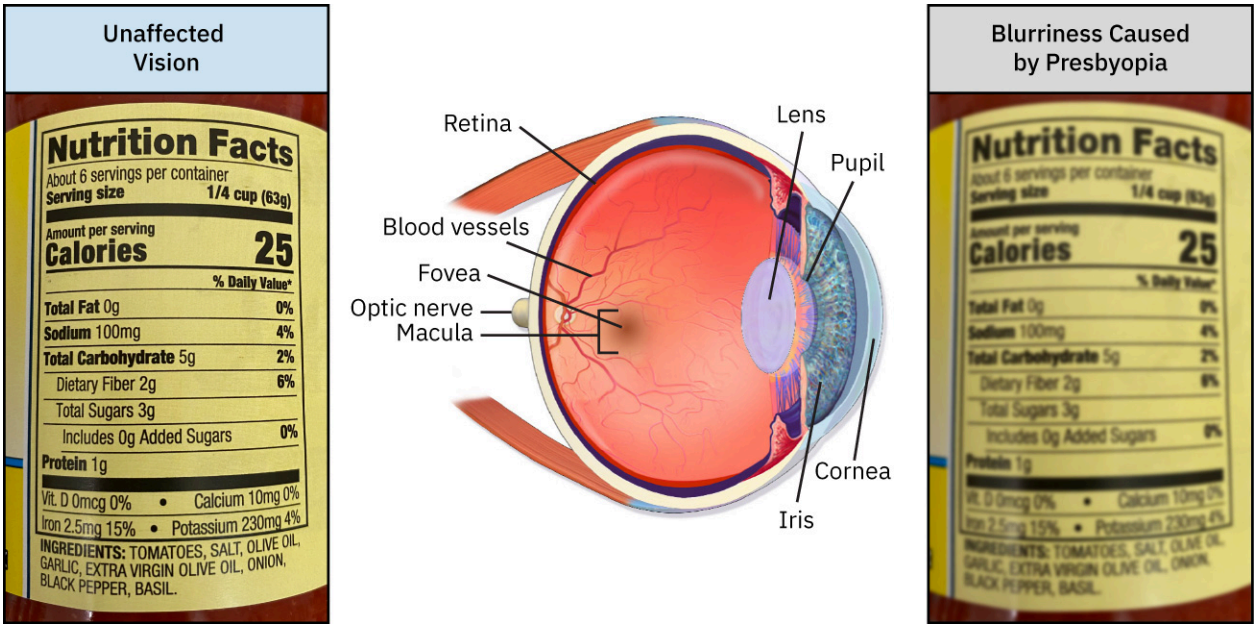


FIGURE 13.4 The lens that bends and flattens to focus light entering the eye becomes less flexible in middle adulthood, making it more difficult for the eye to focus on objects near to the face. As a result, middle-aged adults might experience blurriness when reading small text without reading glasses. (credit left and right: "nutrition facts" by Carol Clarkson/Flickr, CC BY 4.0; credit middle: modification of work "Eye Anatomy" by BruceBlaus, Medical

gallery of Blausen Medical 2014/Wikimedia Commons, CC BY 3.0)

Difficulty adjusting to changes in light may also cause challenges for night driving. In middle age, the pupil does not dilate or constrict as much in response to bright or dimly lit conditions. Compared to younger adults, drivers in middle adulthood self-report greater difficulty seeing pedestrians at night compared to daytime (Mikoski et al., 2019).

Age-related hearing loss is called **presbycusis**. Over time, the inner ear's structures and nerves slowly deteriorate, and initial hearing loss first affects adults' ability to detect high-frequency sound waves. As a result, they may notice an increasing difficulty in hearing high-pitched noises, such as a beeping microwave or dinging cell phone or doorbell. Hearing loss is also exacerbated by cigarette smoking, high blood pressure, and diabetes (Baiduc et al., 2023). Hearing loss due to chronic noise exposure is estimated to affect as many as 25 percent of U.S. adults (National Institute on Deafness and Other Communication Disorders, 2022), particularly men who are traditionally more likely to work in professions with high-volume noise, such as construction or mining (Hoffman et al., 2017). For example, the second most common disability benefit for U.S. service members (a group where men outnumber women at least four to one) is for hearing loss, with 1.3 million people receiving compensation (Veteran Benefit Administration, 2020).

LINK TO LEARNING

Explore this audiovisual representation of different frequency levels within the human audio spectrum (https://openstax.org/r/104FrequLevel) to learn what they sound like. What sounds do you encounter in daily life that might be at low frequency? Medium frequency? High frequency?

Among veterans receiving disability benefits, hearing loss is topped only by tinnitus, another hearing-related condition caused by exposure to loud noises, which causes the sensation of persistent ringing in the ear (U.S. Department of Veterans Affairs, n.d.). Hearing aids can be beneficial to those experiencing hearing loss; however, only 16 percent of those who need them use them. The National Council on Aging identified barriers to hearing aid use, including access to and cost of health care in the United States (Everett, 2023). As a result, many adults consider treatment of hearing loss to be a lower priority than other health-care needs. However, supportive health care for hearing loss is crucial to keeping the growing adult population engaged and healthy. Chronic hearing loss can impede work, social engagement, and daily activities. Straining to hear while working, socializing, or accomplishing daily tasks can lead to stress, fatigue, and impaired brain function. Those who do acquire hearing aids are, therefore, less susceptible to cognitive decline and even dementia risk (Yeo et al., 2022).

Other sensory capabilities may also decline in middle age. As skin thins and loses elasticity with age, sensitivity to hot and cold decreases (Huang et al., 2010). In middle adulthood, **proprioception**, the body's sense of location and movement in space, also becomes less acute, making adults more prone to loss of balance, falls, and ankle injuries as they age (Pinto et al., 2020).

LINK TO LEARNING

Noise-induced hearing loss (NIHL) is a major cause of secondary aging. The National Institute on Deafness and Other Communication Disorders (NIDCD) identifies common sources of unhealthy noise exposure you might encounter throughout life and ways to prevent NIHL. The NIDCD websites present health information about NIHL (https://openstax.org/r/104NIHLhlthInfo) and a NIDCD Fact Sheet on NIHL (https://openstax.org/r/104NIDCDfacts) that presents further details.

Body Changes

In midlife, adults begin to experience changes to their bodies. These changes may initially be more apparent in external visible areas like the skin. In contrast, internal changes, such as reduced bone density, may not be

readily noticed.

Body Composition

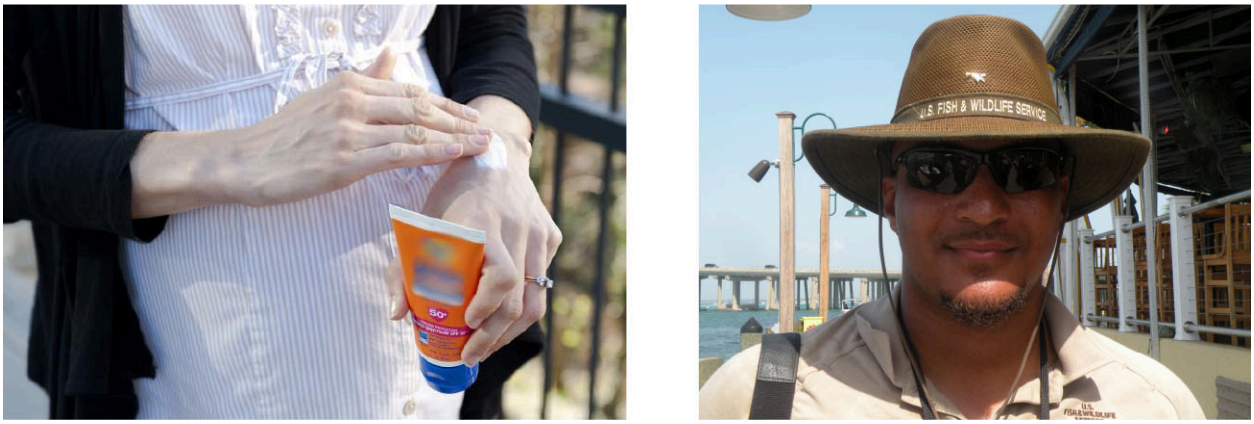
Body composition changes can often be the most apparent signs of aging. Over time, the middle-aged body loses muscle and adds body fat. Age-related muscle loss is called **sarcopenia**. After the age of fifty years, adults lose 1 to 2 percent of muscle each year (Larsson et al., 2019; Marcell, 2003). Related to both sarcopenia and the increase in body fat is also an increase in obesity among middle-aged adults, which is associated with numerous health issues. Slowing metabolism is commonly associated with weight changes in middle age, and it does bear some of the responsibility. The chemical process by which bodies convert food to energy is **metabolism**. In middle adulthood, the basic metabolic rate declines, meaning the body now needs less energy when at rest (Pontzer et al., 2021).

Typical middle-aged bodies for women are not well represented in the media. A recent season of *The Golden Bachelor*, which focused on older adults' search for love, received criticism for the lack of body diversity among the contestants (Battle, 2023). And while adults increasingly focus on how their bodies function (as opposed to how they look) (Roy & Payette, 2012), exposure to images of idealistically thin bodies has been found to negatively influence body image, regardless of age (Price et al., 2023), especially for White women (Roy & Payette, 2012). On the other hand, adults with more positive attitudes toward aging and higher self-esteem are more likely to report positive body image (Pearce et al., 2014; Price et al., 2023).

Semaglutide hormone therapies are being explored as medical approaches to weight management, particularly for adults at risk for diabetes and cardiovascular disease. Semaglutide acts on the hypothalamus to reduce appetite and food intake, and initial studies have found promising results for patients using these injectable medications to sustain weight loss and lower risk of cardiovascular disease and diabetes (Lincoff et al., 2023; Ryan et al., 2024; Wadden et al., 2021).While drugs that contain semaglutide, such as Ozempic and Wegovy, were originally developed to treat type 2 diabetes, researchers are exploring their usefulness for weight management. While Wegovy is approved by the U.S. Food and Drug Administration (FDA) as a method of weight management, Ozempic is still only FDA approved to treat type 2 diabetes and lower the risk of associated cardiovascular disease (FDA, 2024). More research is needed to determine the long-term effectiveness against possible side effects and risks of these drugs as medical approaches to adult weight management.

Skin

The skin shows noticeable signs of aging, such as wrinkles, age spots, and sagging. The layers of skin lose their elasticity, thickness, and water and fat content, which causes the skin to appear loose or wrinkled. Too much sun exposure without adequate protection (e.g., using sunscreen or wearing a hat) results in secondary aging with sunspots, wrinkling, and increased risk of skin cancer (Wong & Chew, 2021) (Figure 13.5).



(a) (b)

FIGURE 13.5 Regular use of sun protection, such as (a) sunscreen and (b) hats, can reduce the effects of secondary aging, such as wrinkles and sunspots. (credit a: modification of work "Pregnant woman standing outdoors, while applying sunscreen to her exposed skin (21755)" by Lauren Bishop/Centers for Disease Control and Prevention, Public Domain; credit b: modification of work "Keenan Adams models the new uniform sun hat!" by U.S. Fish and Wildlife Service Southeast Region/Wikimedia Commons, Public Domain)

Bone Density

One important health concern in middle adulthood is decreasing bone density. Bone density reaches a peak in the mid to late thirties and then progressively declines in a process called **osteoporosis**. Osteoporosis, which can result in more frequent bone fractures and breaks, occurs in those assigned female at birth (AFAB) at twice the rate as it does for those assigned male at birth (AMAB), owing to the reduction of estrogen and progesterone experience during menopause. The risk of osteoporosis can be reduced through diet and exercise.

Increasing calcium consumption starting in early adulthood helps the body to grow and helps strengthen the bones and teeth. However, the body does not produce its own calcium, so this nutrient must be obtained through calcium-rich foods, such as dairy products, almonds, dark leafy greens, salmon, and tofu. Vitamin D helps the body to absorb the calcium in these foods. Vitamin D is produced naturally by the body but can also be supplemented by foods rich in vitamin D, such as fish, eggs, mushrooms, and vitamin D–fortified foods, such as milk and cereal.

Bone health can also be promoted through regular participation in strength-training exercises, which have been shown to increase bone density in persons AFAB (Kistler-Fischbacher et al., 2021; Nelson et al., 1994). Strength training also helps support balance, metabolism, and cognition (Mayo Clinic, 2023). Strength training does not require weightlifting but rather weight-bearing exercises. Weight-bearing exercises are those that require the bones and joints of our body to sustain our own body weight and can include yoga, walking, jogging, or climbing stairs (Figure 13.6).

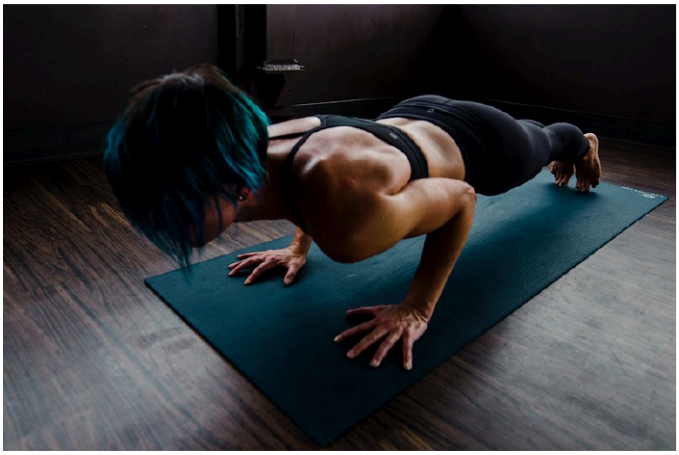


FIGURE 13.6 Our bodies adapt to weight-bearing exercises, such as planks and climbing stairs, by increasing bone density, which promotes bone strength. (credit: Woman doing push ups" by David Stewart/https://homegets.com, CC BY 2.0)

IT DEPENDS

Do Professional Athletes Have to Retire before Middle Adulthood?

You earlier read the story of athlete Tom Brady, who retired from professional football at forty-six years of age. While in most major professional sports, athletes retire before age thirty (RBC Wealth Management, 2024), some notable individuals continue achieving in their thirties, forties, and even fifties. Serena Williams won the 2017 Australian Open at the age of thirty-five years, while eight weeks pregnant. The oldest woman athlete at the 2022 Winter Olympics was Germany's Claudia Pechstein, a speed skater who placed ninth just three days before her fiftieth birthday. Japanese soccer player Kazuyoshi Miura plays for Yokohama FC at the age of fifty-seven years.

While these individuals are all notable, several subtle changes occur physically that can make continued athletic achievements like these difficult after early adulthood. Reaction times in middle adulthood are slower than in young adulthood. Changes of even 0.1 milliseconds can be enough to affect performance in many reactionary or responsive sports (like reacting to a serve in tennis). The changes in metabolism and body composition require adjustments to training and diet to maintain a fitness level appropriate for competing with athletes who are at their optimal younger age. Athletes who continue playing in middle age maintain careful diets and engage in increased strength work to maintain muscle and bone mass.

References

Agarwal, P., Leurgans, S., Agrawal, S., Aggarwal, N. T., Cherian, L. J., James, B. D., Dhana, K., Baiduc, R. R., Sun, J. W., Berry, C. M., Anderson, M., & Vance, E. A. (2023). Relationship of cardiovascular disease risk and hearing loss in a clinical population. *Scientific Reports, 13*(1), 1642. https://doi.org/10.1038/s41598-023-28599-9

Barnes, L. L., Bennett, D. A., & Schneider, J. A. (2023). Association of Mediterranean-DASH intervention for neurodegenerative delay and Mediterranean diets with Alzheimer disease pathology. *Neurology*. https://doi.org/10.1212/WNL.0000000000207176

Battle, M. (2023, September 29). *What the golden bachelor says about desirability as we age.* Time. https://time.com/6318687/golden-bachelor-dating-aging-desireability-essay/

Beydoun, M. A., Beydoun, H. A., Hossain, S., El-Hajj, Z. W., Weiss, J., & Zonderman, A. B. (2020). Clinical and bacterial markers of periodontitis and their association with incident all-cause and Alzheimer's disease dementia in a large national survey. *Journal of Alzheimer's Disease, 75*(1), 157–172. https://doi.org/10.3233/JAD-200064

Caçola, P., Roberson, J., & Gabbard, C. (2013). Aging in movement representations for sequential finger movements: A comparison between young-, middle-aged, and older adults. *Brain and Cognition, 82*(1), 1–5. https://doi.org/10.1016/j.bandc.2013.02.003

Carlozzi, N. E., Tulsky, D. S., Kail, R. V., & Beaumont, J. L. (2013). NIH Toolbox Cognition Battery (Cb): Measuring processing speed. *Monographs of the society for research in child development, 78*(4), 88–102. https://doi.org/10.1111/mono.12036

Carstensen, L. L. (2021). Socioemotional selectivity theory: The role of perceived endings in human motivation. *Gerontologist, 61*(8), 1188–1196. https://doi.org/10.1093/geront/gnab116

Carstensen, L. L., & Mikels, J. A. (2005). At the intersection of emotion and cognition: Aging and the positivity effect. *Current Directions in Psychological Science, 14*, 117–121. https://doi.org/10.1111/j.0963-7214.2005.00348.x

Carstensen, L. L., & Reynolds, M. E. (2023). Age differences in preferences through the lens of socioemotional selectivity theory. *The Journal of the Economics of Ageing, 24*, Article 100440. https://doi.org/10.1016/j.jeoa.2022.100440

Charles, S. T., Mather, M., & Carstensen, L. L. (2003). Aging and emotional memory: The forgettable nature of negative images for older adults. *Journal of Experimental Psychology. General, 132*(2), 310–324. https://doi.org/10.1037/0096-3445.132.2.310

Chopik, W. J., Bremner, R. H., Johnson, D. J., & Giasson, H. L. (2018). Age differences in age perceptions and developmental transitions. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg.2018.00067

Cohen, S. (2004). Social relationships and health. *American Psychologist, 59*(8), 676–684. https://doi.org/10.1037/0003-066X.59.8.676
DeArdo, B. (2024, February 29). *Tom Brady beats his 40-yard dash time from the 2000 NFL combine at age 46*. CBS Sports. https://www.cbssports.com/nfl/news/tom-brady-beats-his-40-yard-dash-time-from-2000-nfl-combine-at-age-46/#:~:text=In%20fact%2C%20Brady%20is%20actually,he%20recently%20ran%20the%2040.&text=Here%27s%20a%20side%2Dby%2Dside,of%20Brady%20running%20the%2040
Dominy, S. S., Lynch, C., Ermini, F., Benedyk, M., Marczyk, A., Konradi, A., Nguyen, M., Haditsch, U., Raha, D., Griffin, C., Holsinger, L. J., Arastu-Kapur, S., Kaba, S., Lee, A., Ryder, M. I., Potempa, B., Mydel, P., Hellvard, A., Adamowicz, K., Hasturk, H., . . .Potempa, J. (2019). *Porphyromonas gingivalis* in Alzheimer's disease brains: Evidence for disease causation and treatment with small-molecule inhibitors. *Science Advances, 5*(1), Article eaau3333. https://doi.org/10.1126/sciadv.aau3333
Everett, C. (2023, August 11). *Only 1 in 6 Americans with hearing loss wears hearing aids–here's why*. National Council on Aging. https://www.ncoa.org/adviser/hearing-aids/low-hearing-loss-treatment-reasons/
Food and Drug Administration. (2024, January 10). *Medications containing semaglutide marketed for Type 2 diabetes or weight loss*. https://www.fda.gov/drugs/postmarket-drug-safety-information-patients-and-providers/medications-containing-semaglutide-marketed-type-2-diabetes-or-weight-loss
Grossniklaus, H. E., Nickerson, J. M., Edelhauser, H. F., Bergman, L. A., & Berglin, L. (2013). Anatomic alterations in aging and age-related diseases of the eye. *Investigative Ophthalmology and Visual Science, 54*(14), ORSF23–ORSF27. https://doi.org/10.1167/iovs.13-12711
Gunter, T. C., Jackson, J. L., & Mulder, G. (1998). Priming and aging: An electrophysiological investigation of N400 and recall. *Brain and Language, 65*(2), 333–355. https://doi.org/10.1006/brln.1998.1987
Hirst, M. (2023, June 23). *Not as cold as you might think: Syracuse, NY, a food desert*. Unpacking Your Lunch. https://unpackingyourlunch.wixsite.com/unpacking-your-lunch/post/not-as-cold-as-you-might-think-syracuse-ny-a-food-desert
Hoffman, H. J., Dobie, R. A., Losonczy, K. G., Themann, C. L., & Flamme, G. A. (2017). Declining prevalence of hearing loss in U.S. adults aged 20 to 69 years. JAMA Otolaryngology Head and Neck Surgery, *143*(3), 274–285. https://doi.org/10.1001/jamaoto.2016.3527
Huang, H.-W., Wang, W.-C., & Lin, C.-C. K. (2010). Influence of age on thermal thresholds, thermal pain thresholds, and reaction time. *Journal of Clinical Neuroscience: Official Journal of the Neurosurgical Society of Australasia, 17*(6), 722–726. https://doi.org/10.1016/j.jocn.2009.10.003
Jeon, K. H., Han, K., Jeong, S.-M., Park, J., Yoo, J. E., Yoo, J., Lee, J., Kim, S., & Shin, D. W. (2023). Changes in alcohol consumption and risk of dementia in a nationwide cohort in South Korea. *JAMA Network Open, 6*(2), Article e2254771. https://doi.org/10.1001/jamanetworkopen.2022.54771
Kistler-Fischbacher, M., Weeks, B. K., & Beck, B. R. (2021). The effect of exercise intensity on bone in postmenopausal women (part 1): a systematic review. *Bone, 143*, Article 115696. https://doi.org/10.1016/j.bone.2020.115696
Konopka, L. (2015). How exercise influences the brain: A neuroscience perspective. *Croatian Medical Journal, 56*(2), 169–171. https://doi.org/10.3325/cmj.2015.56.169
Kray, J., Eber, J., & Karbach, J. (2008). Verbal self-instructions in task switching: A compensatory tool for action-control deficits in childhood and old age? *Developmental Science, 11*(2), 223–236. https://doi.org/10.1111/j.1467-7687.2008.00673.x
Kumar, M., Srivastava, S., & Muhammad, T. (2022). Relationship between physical activity and cognitive functioning among older Indian adults. *Scientific Reports, 12*(1), 1–13. https://doi.org/10.1038/s41598-022-06725-3
Kwon, D., Maillet, D., Pasvanis, S., Ankudowich, E., Grady, C. L., & Rajah, M. N. (2016). Context memory decline in middle aged adults is related to changes in prefrontal cortex function. *Cerebral Cortex, 26*(6), 2440–2460. https://doi.org/10.1093/cercor/bhv068
Larsson, L., Degens, H., Li, M., Salviati, L., Lee, Y. I., Thompson, W., Kirkland, J. L., & Sandri, M. (2019). Sarcopenia: Aging-related loss of muscle mass and function. *Physiological reviews, 99*(1), 427–511. https://doi.org/10.1152/physrev.00061.2017
Lincoff, A. M., Brown-Frandsen, K., Colhoun, H. M., Deanfield, J., Emerson, S. S., Esbjerg, S., Hardt-Lindberg, S., Hovingh, G. K., Kahn, S. E., Kushner, R. F., Lingvay, I., Oral, T. K., Michelsen, M. M., Plutzky, J., Tornøe, C. W., & Ryan, D. H. (2023). Semaglutide and cardiovascular outcomes in obesity without diabetes. *New England Journal of Medicine, 389*(24), 2221–2232. https://doi.org/10.1056/NEJMoa2307563
Liu-Ambrose, T., Falck, R. S., Dao, E., Best, J. R., Davis, J. C., Bennett, K., Hall, P. A., Hsiung, G.-Y. R., Middleton, L. E., Goldsmith, C. H., Graf, P., & Eng, J. J. (2022). Effect of exercise training or complex mental and social activities on cognitive function in adults with chronic stroke: A randomized clinical trial. *JAMA Network Open, 5*(10), Article e2236510. https://doi.org/10.1001/jamanetworkopen.2022.36510
Marcell T. J. (2003). Sarcopenia: causes, consequences, and preventions. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences, 58*(10), M911–M916. https://doi.org/10.1093/gerona/58.10.m911
Mather, M., Canli, T., English, T., Whitfield, S., Wais, P., Ochsner, K., John, D. E. G., & Carstensen, L. L. (2004). Amygdala responses to emotionally valenced stimuli in older and younger adults. *Psychological science, 15*(4), 259–263. https://doi.org/10.1111/j.0956-7976.2004.00662.x
Mayo Clinic. (2023, April 29). *Strength training: Getting stronger, leaner, healthier*. https://www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/strength-training/art-20046670#:~:text=This%20can%20help%20you%20maintain,Sharpen%20your%20thinking%20skills
Mayo Clinic Health System. (2022, March 18). *Cognitive overload: When processing information becomes a problem*. https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/cognitive-overload
Mikoski, P., Zlupko, G., & Owens, D. A. (2019). Drivers' assessments of the risks of distraction, poor visibility at night, and safety-related behaviors of themselves and other drivers. *Transportation Research Part F: Traffic Psychology and Behaviour, 62*, 416–434. https://doi.org/10.1016/j.trf.2019.01.011
National Institute of Mental Health. (2021). *Mental illness*. https://www.nimh.nih.gov/health/statistics/mental-illness.shtml#:~:text=Prevalence%20of%20Any%20Mental%20Illness%20(AMI),-Figure%201%20shows&text=The%20prevalence%20of%20AMI%20was,50%20and%20older%20(14.1%25
National Institute on Deafness and Other Communication Disorders (2022, March 16). *Noise-induced hearing loss*. National Institutes of Health. https://www.nidcd.nih.gov/health/noise-induced-hearing-loss
Nelson, M. E., Fiatarone, M. A., Morganti, C. M., Trice, I., Greenberg, R. A., & Evans, W. J. (1994). Effects of high-intensity strength training on multiple risk factors for osteoporotic fractures. A randomized controlled trial. *JAMA, 272*(24), 1909–1914. https://doi.org/10.1001/jama.1994.03520240037038
Patra, K. (2023, February 1). *Tom Brady says he's retiring for good after 23 seasons in NFL with Buccaneers and Patriots*. NFL. https://www.nfl.com/news/tom-brady-retirement-23-seasons-in-nfl-buccaneers-patriots
Pearce, G., Thøgersen-Ntoumani, C., & Duda, J. (2014). Body image during the menopausal transition: a systematic scoping review. *Health Psychology Review, 8*(4), 473–489. https://doi.org/10.1080/17437199.2013.848408
Petre, A., & Knott, A. (2022, July 29). *Tom Brady diet review: Weight loss, meal plan, and more*. Healthline. https://www.healthline.com/nutrition/tom-brady-diet#the-diet
Pham, K., Mulugeta, A., Zhou, A., O'Brien, J. T., Llewellyn, J. D., & Hyppönen, E. (2021). High coffee consumption, brain volume and risk of dementia and stroke. *Nutritional Neuroscience, 25*(10), 2111–2122. https://doi.org/10.1080/1028415X.2021.1945858
Pinto, S. M., Cheung, J. P. Y., Samartzis, D., Karppinen, J., Zheng, Y.-P., Pang, M. Y. C., & Wong, A. Y. L. (2020). Differences in proprioception between young and middle-aged adults with and without chronic low back pain. *Frontiers in Neurology, 11*, Article 605787. https://doi.org/10.3389/fneur.2020.605787
Pontzer, H., Yamada, Y., Sagayama, H., Ainslie, P. N., Andersen, L. F., Anderson, L. J., Arab, L., Baddou, I., Bedu-Addo, K., Blaak, E. E., Blanc, S., Bonomi, A. G., Bouten, C. V. C., Bovet, P., Buchowski, M. S., Butte, N. F., Camps, S. G., Close, G. L., Cooper, J. A. . . .Speakman, J. R. (2021). Daily energy expenditure through the human life course. *Science, 373*, 808–812. https://doi.org/10.1126/science.abe5017
Price, M., Pink, A. E., Anagnostopoulou, V., Branford, L., Fleming, C., Jenkins, G., Jones, L., Lovesey, C., Mehta, A., & Gatzemeier, J. (2023). Self-esteem, but not age, moderates the influence of viewing social media on body image in adult females. *Psychology of Popular Media, 13*(3), 439–446. https://doi.org/10.1037/ppm0000493.supp
RBC Wealth Management. (2024). *Professional athletes need a retirement game plan*. Royal Bank of Canada. https://www.rbcwealthmanagement.com/en-us/insights/professional-athletes-need-a-retirement-game-plan
Rouch, I., Edjolo, A., Laurent, B., Pongan, E., Dartigues, J.-F., & Amieva, H. (2021). Association between chronic pain and long-term cognitive decline in a population-based cohort of elderly participants. *Pain, 162*(2), 552–560. https://doi.org/10.1097/j.pain.0000000000002047
Roy, M., & Payette, H. (2012). The body image construct among Western seniors: A systematic review of the literature. *Archives of Gerontology and Geriatrics, 55*(1), 505–521. https://doi.org/10.1016/j.archger.2012.04.007
Ryan, D. H., Lingvay, I., Deanfield, J., Kahn, S. E., Barros, E., Burguera, B., Colhoun, H. M., Cercato, C., Dicker, D., Horn, D. B., Hovingh, G. K., Jeppensen, O. K., Kokkinos, A., Lincoff, A. M., Meyhöfer, S. M., Oral, T. K., Plutzky, J., van Beek, A. P., Wilding, J. P. H., & Kushner, R. F. (2024). Long-term weight loss effects of semaglutide in obesity without diabetes in the SELECT trial. *Nature Medicine, 30*, 2049–2057. https://doi.org/10.1038/s41591-024-02996-7
Salthouse, T. (2012). Consequences of age-related cognitive declines. *Annual Review of Psychology, 63*, 201–226. https://doi.org/10.1146/annurev-psych-120710-100328
Tufvesson, E., Melander, O., Minthon, L., Persson, M., Nilsson, P. M., Struck, J., & Nägga, K. (2013). Diabetes mellitus and elevated copeptin levels in middle age predict low cognitive speed after long-term follow-up. *Dementia and Geriatric Cognitive Disorders, 35*(1–2), 67–76. https://doi.org/10.1159/000346292
U.S. Department of Veterans Affairs. (n.d.) *VA research on hearing loss*. Office of Research & Development. https://www.research.va.gov/topics/hearing.cfm
Veteran Benefit Administration. (2020, September 30). *Annual benefits report: Fiscal year 2020*. U.S. Department of Veterans Affairs. https://www.benefits.va.gov/REPORTS/abr/docs/2020_compensation.pdf
Wadden, T. A., Bailey, T. S., Billings, L. K., Davies, M., Frias, J. P., Koroleva, A., Lingvay, I., O'Neil, P. M., Rubino, D. M., Skovgaard, D., Wallenstein, S. O. R., & Garvey, T. (2021). Effect of subcutaneous semaglutide vs. placebo as an adjunct to intensive behavioral therapy on body weight in adults with overweight or obesity: The STEP 3 randomized clinical trial. *JAMA, 325*(14), 1403–1413. https://doi.org/10.1001/jama.2021.1831

Whitehead, B. R. (2016). Health behaviors in older adults: Considering age, affect, and attitudes. *Journal of Health Psychology, 22*(13), 1652 –1657. https://doi.org/10.1177/1359105316631814
Wong, Q. Y. A., & Chew, F. T. (2021). Defining skin aging and its risk factors: A systematic review and meta-analysis. *Scientific Reports, 11*(1), 22075. https://doi.org/10.1038/s41598-021-01573-z
World Health Organization. (2023, January 4). *No level of alcohol consumption is safe for our health.* https://www.who.int/europe/news/item/04-01-2023-no-level-of-alcohol-consumption-is-safe-for-our-health
Willner, P. (2017). The chronic mild stress (CMS) model of depression: History, evaluation and usage. *Neurobiology of Stress, 6*, 78–93. https://doi.org/10.1016/j.ynstr.2016.08.002
Yeo, B. S. Y., Song, H. J. J. M. D., Toh, E. M. S., Ng, L. S., Ho, C. S. H., Ho, R., Merchant, R. A., Tan, B. K. J., & Loh, W. S. (2022). Association of hearing aids and cochlear implants with cognitive decline and dementia: A systematic review and meta-analysis. *JAMA Neurology*, Article e224427. https://doi.org/10.1001/jamaneurol.2022.4427
Zhang, Y., Yang, H., Li, S., Li, W.-D., & Wang, Y. (2021). Consumption of coffee and tea and risk of developing stroke, dementia, and poststroke dementia: A cohort study in the UK Biobank. *PLoS medicine, 18*(11), Article e1003830. https://doi.org/10.1371/journal.pmed.1003830

13.2 Reproductive and Sexual Changes in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify changes in the male and female reproductive systems across middle adulthood
- Describe physical changes associated with pregnancy and menopause
- Identify changes in sexual behavior and attitudes across middle adulthood

Fifty-six-year-old Patricia considers herself to be in a happy long-term partnership. Even though sex is less frequent, there is more focus on emotional intimacy, and she is still very satisfied with her sex life. The couple's physical relationship is nurturing, with lots of affection, and sex is more meaningful, because it is built on shared experiences, respect and acceptance of one another, and knowledge of what each enjoys and dislikes. Overall, Patricia would describe their sexual relationship as loving and complete.

As middle adulthood progresses, people experience changes in their reproductive ability as well as in their sexual behavior and attitudes. The median age of first birth in the United States is now thirty years old, so middle adulthood may include the experience of pregnancy for many. Toward the latter half of middle adulthood, the ability to reproduce declines and then is lost altogether during the life stage known as the **climacteric**. The associated hormonal transitions can result in a variety of physical changes along with changes to cognition, emotion, and sexual experiences. Most individuals continue to engage in sex throughout middle adulthood, experiencing several physical and cognitive benefits.

Female Reproductive Changes

The female reproductive system undergoes several significant changes over the thirty-year span of middle adulthood. During this stage of life, women typically experience two childbirths (with the associated physical changes), though 15 percent of women forty-five to fifty years old have not had biological children (Korhonen, 2023; Schaeffer & Aragão, 2023). Between the ages of forty and sixty years, the female reproductive system begins to experience changes leading to menopause.

Changes Resulting from Pregnancy

Estrogen and progesterone hormones are produced at their highest rate during pregnancy and are responsible for many changes. For example, females may experience sensation changes to taste (e.g., a greater tolerance for some tastes and a decreased ability to taste), a higher sensitivity to smells, and temporary changes to vision and pressure in the eyes. Body temperature rises slightly during pregnancy, which increases risk of heat stress and dehydration.

Physical changes during pregnancy include growth and tenderness of the breasts as milk production begins. The increase in progesterone also influences a relaxing of ligaments and joints. As a result, many pregnant people will notice they have a flatter arch and longer, wider feet (Segal et al., 2013) and may move to a larger shoe size or more flexibly fitting footwear. Stretch marks may also appear on the skin of the abdomen and breasts as well as the thighs. These skin changes will typically fade over time.

Exercise during pregnancy is recommended for most pregnant persons. According to the *Physical Activity Guidelines for Americans*, those accustomed to rigorous exercise prior to pregnancy can continue to engage in those activities (U.S. Department of Health and Human Services, 2018). Those who were not exercising prior to

pregnancy are generally encouraged to start with moderate activities, such as walking or water aerobics, for thirty minutes a day, five days a week.

Pregnancy-induced changes continue into the postpartum period and beyond. Medical professionals typically recommended that people who have given birth avoid sex for six weeks because the cervix (which has contracted and expanded during birth) needs to heal. During pregnancy and breastfeeding, structures inside the breasts swell to support lactation but shrink when no longer needed. This may result in a smaller breast size (Kahn & Sajjad, 2023). Connective tissue in pregnant people's bodies becomes more flexible in order to support body shape changes needed for pregnancy and childbirth, and this loosening of connective structures may lead to long-term changes in shape and function of structures throughout the body, including larger feet with lower arches (Alcahuz-Griñan et al., 2021), increased finger joint flexibility (Afshar & Tabrizi, 2021), wider hips (Morino et al., 2019), looser skin, and a drop in the pelvic floor muscles. Changes to the pelvic floor muscles can sometimes cause discomfort during sex as well as incontinence (difficulty controlling urination), especially when jumping or sneezing. Pelvic floor muscles can be gradually strengthened and supported over time by practicing pelvic muscle exercises and learning to conduct everyday physical activities (like lifting children) using proper posture, muscle engagement, and even breathing (Nowogrodzki, 2019).

LINK TO LEARNING

Writer and editor Bianca London criticizes the pressure that "snap-back" culture puts on women's postpartum bodies. Check out her Glamour Magazine UK article where she wonders why "mum bods" can't be celebrated (https://openstax.org/r/104MumBod) as part of the diversity of body shapes across the lifespan.

Menopause

The climacteric results in **menopause**, the end of the menstrual cycle. Menopause may occur anywhere between forty and sixty years of age and consists of three phases: premenopause, perimenopause, and postmenopause. During the premenopausal phase, females begin to experience irregular menstrual cycles due to fluctuations in estrogen (Figure 13.7). In the perimenopausal phase, even greater variations in menstrual cycles can occur. This phase is often associated with unexpected sensations of feeling hot and increased perspiration (among numerous physical symptoms), commonly referred to as hot flashes. These changes leading up to menopause can occur gradually over eight to ten years. The postmenstrual phase occurs as estrogen and progesterone levels continue to drop and menstruation has ceased for one year.

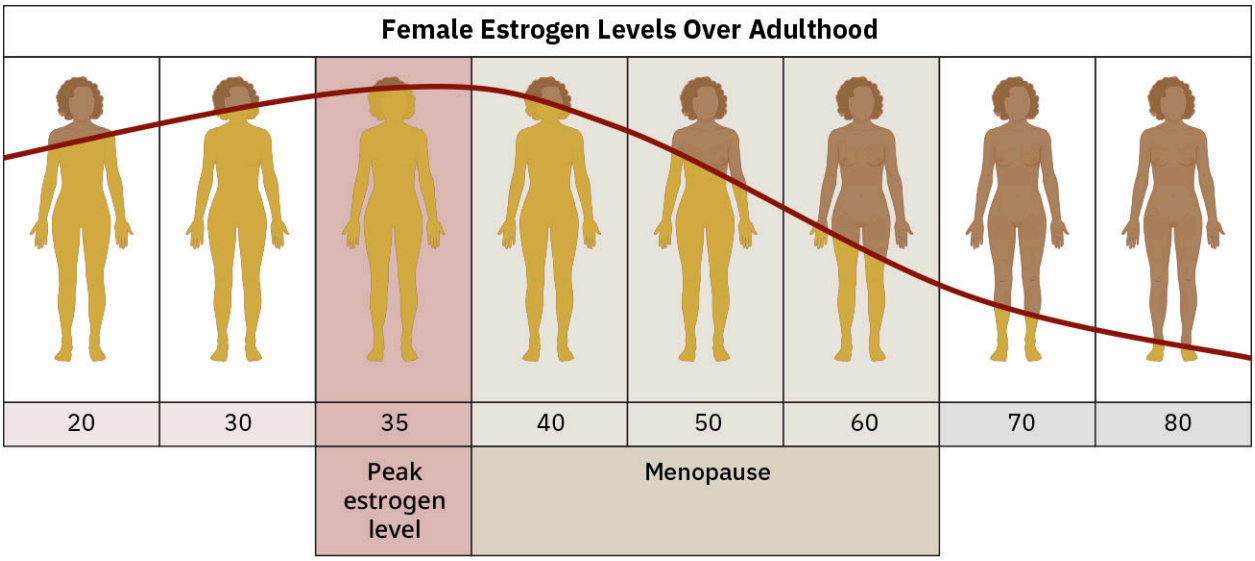


FIGURE 13.7 People assigned female at birth experience fluctuations in estrogen across adulthood, which are associated with changes in fertility. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0

license)

LINK TO LEARNING

This video about the biological processes that lead to menopause and how women experience these changes (https://openstax.org/r/104Menopause) is presented by obstetrics-gynecology and pain physician Dr. Jen Gunter.

Menopausal changes in hormone levels bring other physical changes beyond the loss of reproductive ability. For example, estrogen helps maintain bone mass, so the drop in estrogen puts women at increased risk of osteoporosis and subsequent skeletal injuries, such as bone fractures (Ji & Yu, 2015) (Figure 13.8). In general, menopause does not cause severe psychological symptoms, though research indicates that Black women in the United States are at greater risk of experiencing menopausal symptoms earlier and to a greater extent than White women because of social disadvantages and disparate treatment (Harlow et al., 2022). Some women report brain fog and issues with memory, and research indicates that estrogen may protect neural health (Goldstein, 2021). Menopause is also associated with a decrease in volume of some areas of the cortex, even when age is controlled for (Schelbaum et al., 2021). However, many reported cognitive concerns can also be attributed to disruption of sleep due to hot flashes and the general stress of middle adulthood. In the postmenopausal phase, cognitive abilities return to a level more consistent with that prior to menopause (Schelbaum et al., 2021).

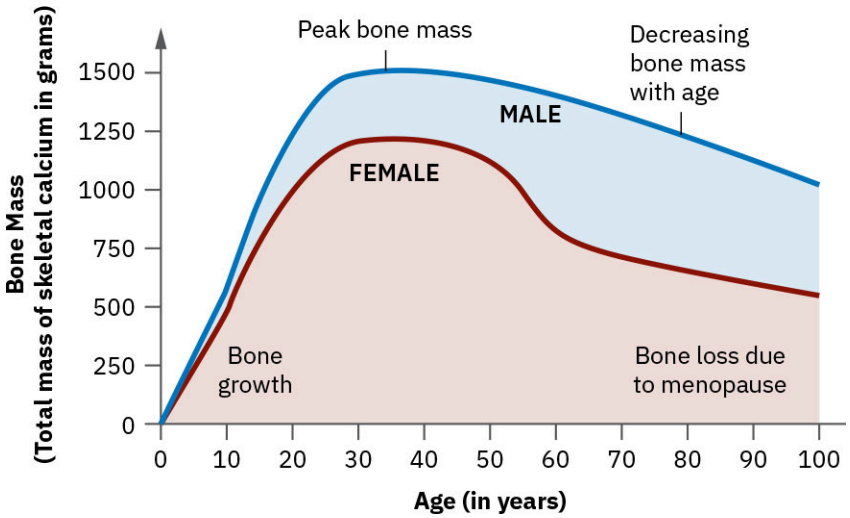


FIGURE 13.8 Declines in estrogen and testosterone during adulthood are associated with bone loss, with persons assigned female at birth experiencing lower peak bone mass and sharper decline in middle adulthood than persons assigned male at birth. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The physical and psychological experience of menopause varies individually and cross-culturally. According to research by Hall and colleagues (2007), while most persons AFAB in the United States report experiencing hot flashes during menopause, hot flashes are reported less frequently by females in many Asian countries. Persons AFAB living in modern cultures removed from traditional cultural practices often characterize the transition in terms of discomfort or embarrassment, anxiety, loss of control, and loss of youth, and many see it as a disorder that requires treatment. Persons AFAB in more traditional cultures are more likely to welcome an increase in wisdom, relief from the responsibility to bear and raise children, and the opportunity to mentor others and start a new chapter of life. Societal influences on perceptions of menopause shape different responses to and management of menopause, including self-care practices such as using cold compresses and controlled breathing, using herbal remedies, seeking out role models and education, acknowledging menopause as a rite of passage and attainment of privilege, and adopting a positive, forward-looking mindset (Hall et al., 2007).

IT DEPENDS

Evaluating Hormone Replacement Therapy

In the 1990s, hormone replacement therapy (HRT), consisting of doses of estrogens and progestin, was often prescribed to women to offset symptoms of menopause and reduce the risk of osteoporosis and cardiovascular disease. While observed increases in breast cancer and uterine cancer were associated with long-term high-dosage use, overall mortality was predicted to decrease as a result of the reduced rate of cardiovascular disease (Ross et al., 1989), so it was still recommended that "HRT should be offered to all postmenopausal women" who did not have preexisting risk factors, such as a history of breast cancer (McKeon, 1994).

However, in 2002, longitudinal clinical trials conducted by the Women's Health Initiative (WHI) on the long-term effects of HRT were stopped prematurely based on results indicating that the risks of breast cancer and CVD were too great for study participants. This drastic action created panic among many patients and doctors, and HRT was no longer considered an advisable treatment (Tormey et al., 2006). However, criticisms of the design of the study, such as that it included women much older than would typically be prescribed HRT, have led some to reconsider the rejection of HRT (Cagnacci & Venier, 2019).

Reanalysis of the original WHI data (Manson et al., 2013) and new clinical trials (Schierbeck et al., 2012) that studied outcomes of HRT by age found that if prescribed within ten years of the onset of menopausal symptoms, the treatment was associated with menopausal symptom relief and a *decreased* risk of CVD and death. So, what now? The best advice seems to be to talk with your doctor. Dr. Barb DePree, a gynecologist with thirty years of experience, recommends, "Treatment for menopausal symptoms needs to be customized for each woman, given her risk factors, symptoms, and preferences" (DePree, 2019).

Male Reproductive Changes

Like women, men are also more likely to have children after age thirty years. At that same age, however, the fertility of the male reproductive system begins to decline, with a decrease in testicular size and sperm quality beginning in middle adulthood (Vaughan et al., 2020; Well et al., 2007; Zhu et al., 2011). The climacteric is a more gradual process in males than in females. Several changes occur in the male reproductive system that make reproduction less likely but not impossible. Around age forty to forty-five years, sperm cell production decreases, ejaculated semen is lower in overall volume and contains a lower percentage of reproductively viable sperm cells. These changes may occur in large part because around the age of forty years, males experience a 1 percent drop per year in testosterone production (Figure 13.9). This hormonal decrease is also associated with loss of muscle mass and strength, increased fatigue, and increased risk of osteoporosis (Rajfer, 2003; Singh, 2013).

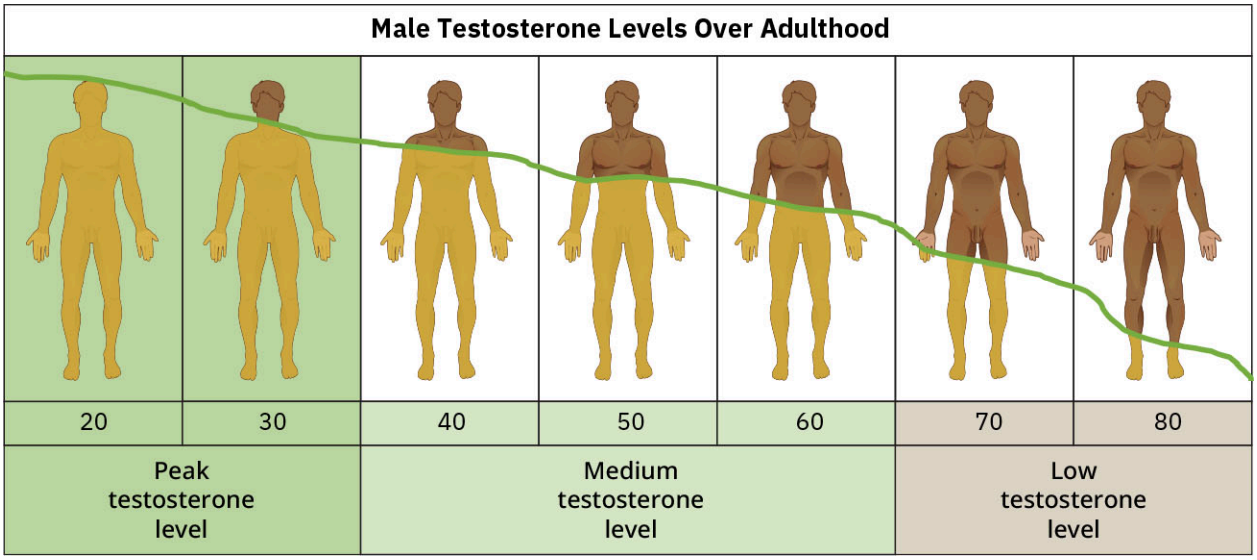


FIGURE 13.9 Testosterone levels in individuals assigned male at birth decrease gradually throughout adulthood. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

There has been a rise in the use of testosterone replacement therapy to treat reduced testosterone production in adult males, though its use is not without controversy. Some studies show health benefits such as improved mood and bone density (Snyder et al., 2018), while others suggest health concerns such as increased risk of stroke (Loo et al., 2017).

One of the most common afflictions in middle adulthood is **erectile dysfunction (ED)**, the inability to achieve or maintain an erection. Roughly 31 percent of men between ages fifty-seven and sixty-four years have ED (Castleman, 2017). Predictors include physical factors like low testosterone and obesity, as well as a host of health-related factors like diabetes and hypertension and psychological aspects such as depression. Erectile dysfunction is associated with increased risk of cardiovascular disease and dementia (Kessler et al., 2019). The most common treatment is the use of vasodilator medications (such as Viagra and Cialis). Originally designed to control hypertension, these drugs increase blood flow to the penis. Pelvic floor exercises have also been demonstrated to be an effective therapy for ED (Dorey et al., 2004; Yaacov et al., 2022).

LINK TO LEARNING

Exercises to strengthen the muscles of the pelvic floor are recommended as effective methods to treat a variety of conditions, including bladder control problems and ED. Watch this video about the benefits of pelvic floor exercises (https://openstax.org/r/104PelvicExerc) to learn more.

Changes in Sexual Activity

In middle adulthood, individuals generally remain sexually active, despite declines in frequency of sexual activity. Changes in marital status due to divorce or widowhood, as well as time demands from children and jobs, may reduce opportunities for sexual activity. Poorer physical health (rather than reproductive changes) also predicts a reduction in sexual activity (Karraker et al., 2011).

AARP surveys how middle-aged (aged forty-five to fifty-nine years) and older (aged sixty-plus years) adults value and engage in sex (Fisher et al., 2010). Midlife adults place more value on sex than older adults, though many see it as less important as they age. Through midlife, men tend to think about and be more interested in sex than women. Thirty-three percent of men and 23 percent of women surveyed reported having sex at least once a week. Another important finding in AARP's research is that, for middle-aged women, the quality of the relationship with their sexual partner influences the regularity of sexual activity and the positivity of life satisfaction. When asked what they enjoy most about sex in middle adulthood, adults (and especially women)

cited their psychological and romantic connection to their sexual partners, including emotional intimacy, comfort, communication, quality time, and affection (Flanigan, 2023; Koch & Mansfield, 2007; Lodge & Umberson, 2012) (Figure 13.10).

FIGURE 13.10 In middle adulthood, women seek intimacy, love, companionship, and affection from their sexual partners. (credit: modification of work "Sa Pa kiss" by "Newone"/Wikimedia Commons, CC BY 3.0)

Continued sexual activity is associated with increased psychological and cognitive health, including reduced risk of depression, and those who are healthy and active report enjoying their sex life more (Fisher, et al., 2010; Jackson et al., 2019). The association between sexual activity and well-being is likely a bidirectional influence. Depression or poor health may cause a person to withdraw from social connections and avoid physical activity, including sexual intimacy. On the other hand, experiencing sexual intimacy may increase an adult's feelings of belongingness and relational intimacy, which may boost mood and protect against depression. Research also finds positive correlations between sexual activity and cognitive functions and memory (Wright et al., 2019), even when controlling for other variables such as age, education, loneliness, and physical health. Researchers have speculated that the release of neurotransmitters such as dopamine and oxytocin in response to sexual activity may enhance cognitive activity (Wright & Jenks, 2016).

References

Afshar, A., & Tabrizi, A. (2021). Pregnancy-related hand and wrist problems. *The Archives of Bone and Joint Surgery, 9*(3), 345–349. https://doi.org/10.22038/abjs.2020.50995.2531

Alcahuz-Griñan, M., Nieto-Gil, P., Perez-Soriano, P., & Gijon-Nogueron, G. (2021). Morphological and postural changes in the foot during pregnancy and puerperium: A longitudinal study. *International Journal of Environmental Research and Public Health, 18*(5), 2423. https://doi.org/10.3390/ijerph18052423

Cagnacci, A., & Venier, M. (2019). The controversial history of hormone replacement therapy. *Medicina, 55*(9), 602. https://doi.org/10.3390/medicina55090602

Castleman, M. (2017, December 15). *What fraction of men develop erectile dysfunction, really?* Psychology Today. https://www.psychologytoday.com/us/blog/all-about-sex/201712/what-fraction-men-develop-erectile-dysfunction-really

DePree, B. (2019, September 25). *Another study on hormone therapy and breast cancer.* Healthy Women. https://www.healthywomen.org/content/article/another-study-hormone-therapy-and-breast-cancer

Dorey, G., Speakman, M., Feneley, R., Swinkels, A., Dunn, C., & Ewings, P. (2004). Randomised controlled trial of pelvic floor muscle exercises and manometric biofeedback for erectile dysfunction. *The British Journal of General Practice : The Journal of the Royal College of General Practitioners, 54*(508), 819–825. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1324914/

Fisher, L.G., Anderson, O., Chapagain, M.,Montenegro, X., Smoot, J., & Takalkar, A. (2010, May). *Sex, romance, and relationships: AARP survey of midlife and older adults.* AARP Research. https://doi.org/10.26419/res.00063.001

Flanigan, R. L. (2023, September 29). *The secrets of sex over 40: Eight questions answered.* AARP. https://www.aarp.org/home-family/friends-family/info-2023/sex-over-40-study.html

Goldstein, J. M. (2021, November 3). *Menopause and memory: Know the facts.* Harvard Health Publishing. https://www.health.harvard.edu/blog/menopause-and-memory-know-the-facts-202111032630

Hall, L., Clark-Callister, L., Berry, J. A., & Matsumara, G. (2007). Meanings of menopause: Cultural influences on perception and management of menopause. *Journal of Holistic Nursing, 25*(2), 106-118. https://doi.org/10.1177/0898010107299432

Harlow, S. D., Burnett-Bowie, S. A. M., Greendale, G. A., Avis, N. E., Reeves, A. N., Richards, T. R., & Lewis, T. T. (2022). Disparities in reproductive aging and midlife health between black and white women: The study of women's health across the nation (SWAN). *Womens Midlife Health, 8*(3). https://doi.org/10.1186/s40695-022-00073-y

Jackson, S. E., Firth, J., Veronese, N., Stubbs, B., Koyanagi, A., Yang, L., & Smith, L. (2019). Decline in sexuality and wellbeing in older adults: A population-based study. *Journal of Affective Disorders, 245*, 912–917. https://doi.org/10.1016/j.jad.2018.11.091

Ji, M. X., & Yu, Q. (2015). Primary osteoporosis in postmenopausal women. *Chronic diseases and translational medicine, 1*(1), 9–13. https://doi.org/10.1016/j.cdtm.2015.02.006

Karraker, A., Delamater, J., & Schwartz, C. R. (2011). Sexual frequency decline from midlife to later life. *The Journals of Gerontology. Series B, Psychological Sciences*

and Social Sciences, *66*(4), 502–512. https://doi.org/10.1093/geronb/gbr058
Kessler, A., Sollie, S., Challacombe, B., Briggs, K., & Van Hemelrijck, M. (2019). The global prevalence of erectile dysfunction: A review. *BJU International*, *124*(4), 587–599. https://doi.org/10.1111/bju.14813
Khan, Y. S., & Sajjad, H. (2023). Anatomy, thorax, mammary gland. *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK547666/
Koch, P. B., & Mansfield, P. K. (2002). Women's sexuality as they age: The more things change, the more they stay the same. *Sex Information & Education Council of the United States Report*, *30*(2), 5–9.
Korhonen, V. (2024, July 5). Percentage of childless U.S. women in 2020, by age. *Statista*. https://www.statista.com/statistics/241535/percentage-of-childless-women-in-the-us-by-age/
Lodge, A. C. & Umberson, D. (2012). All shook up: Sexuality of mid- to later life married couples. *Journal of Marriage and Family, 74*, 428–443. https://doi.org/10.1111/j.1741-3737.2012.00969.x
Loo, S. Y., Chen, B. Y., Yu, O. H. Y., Azoulay, L., & Renoux, C. (2017). Testosterone replacement therapy and the risk of stroke in men: A systematic review. *Maturitas*, *106*, 31–37. https://doi.org/10.1016/j.maturitas.2017.08.013
Manson J. E., Chlebowski R. T., Stefanick M. L., Aragaki, A. K., Rossouw, J. E., Prentice, R. L., Anderson, G., Howard, B. V., Thomson, C. A., LaCroix, A. Z., Wactawski-Wende, J., Jackson, R. J., Limacher, M., Margolis, K. L., Wassertheil-Smoller, S., Beresford, S. A., Cauley, J. A., Eaton, C. B., Gass, M., . . .Wallace, R. B. (2013). Menopausal hormone therapy and health outcomes during the intervention and extended poststopping phases of the Women's Health Initiative randomized trials. *JAMA, 310*, 1353–1368. https://doi.org/10.1001/jama.2013.278040
McKeon V. A. (October 1994). Hormone replacement therapy: Evaluating the risks and benefits. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 23*(8), 647–657. https://doi.org/10.1111/j.1552-6909.1994.tb01934.x
Morino, S., Ishihara, M., Umezaki, F., Hatanaka, H., Yamashita, M., & Aoyama, T. (2019). Pelvic alignment changes during the perinatal period. *PLoS One*, *14*(10), Article e0223776. https://doi.org/10.1371/journal.pone.0223776
Nowogrodzki, A. (2020, May 8). *Postpartem body changes you should know about*. The New York Times. https://www.nytimes.com/article/postpartum-body.html
Rajfer J. (2003). Decreased testosterone in the aging male. *Reviews in Urology*, *5*(Suppl 1), S1–S2.
Ross, R. K., Pike, M. C., Henderson, B. E., Mack, T. M., & Lobo, R. A. (1989). Stroke prevention and estrogen replacement therapy. *The Lancet, 333* (8636), 505. https://doi.org/10.1016/S0140-6736(89)91411-6
Schaeffer, K., & Aragão, C. (2023, May 9). *Key facts about moms in the U.S.* The Pew Research Center. https://www.pewresearch.org/short-reads/2023/05/09/facts-about-u-s-mothers/
Schelbaum, E., Loughlin, L., Jett, S., Zhang, C., Jang, G., Malviya, N., Hristov, H., Pahlajani, S., Isaacson, R., Dyke, J. P., Kamel, H., Brinton, R. D., & Mosconi, L. (2021). Association of reproductive history with brain MRI biomarkers of dementia risk in midlife. *Neurology*, *97*(23), e2328–e2339. https://doi.org/10.1212/wnl.0000000000012941
Schierbeck L. L., Rejnmark L., Tofteng C. L., Stilgren, L., Eiken, P., Mosekilde, L., Køber, L., & Jensen, J.-E. B. (2012). Effect of hormone replacement therapy on cardiovascular events in recently postmenopausal women: Randomized trial. *BMJ, 345*, Article e6409. https://doi.org/10.1136/bmj.e6409
Segal, N. A., Boyer, E. R., Teran-Yengle, P., Glass, N., Hillstrom, H. J., & Yack, H. J. (2013). Pregnancy leads to lasting changes in foot structure. *American Journal of Physical Medicine & Rehabilitation*, *92*(3), 232–240. https://doi.org/10.1097/PHM.0b013e31827443a9
Singh, P. (2013). Andropause: Current concepts. *Indian Journal of Endocrinology and Metabolism*, *17*(3), S621–S629. https://doi.org/10.4103/2230-8210.123552
Snyder, P. J., Bhasin, S., Cunningham, G. R., Matsumoto, A. M., Stephens-Shields, A. J., Cauley, J. A., Gill, T. M., Barrett-Connor, E., Swerdloff, R. S., Wang, C., Ensrud, K. E., Lewis, C. E., Farrar, J. T., Cella, D., Rosen, R. C., Pahor, M., Crandall, J. P., Molitch, M. E., Resnick, S. M., . . .Ellenberg, S. S. (2018). Lessons from the testosterone trials. *Endocrine reviews*, *39*(3), 369–386. https://doi.org/10.1210/er.2017-00234
Tormey, S. M., Malone, C. M., McDermott, E. W., O'Higgins, N. J., & Hill, A. D. K. (2006). Current status of combined hormone replacement therapy in clinical practice. *Clinical Breast Cancer*, *6*(2), S51–S57. https://doi.org/10.3816/cbc.2006.s.004
U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans*. (2nd Ed). https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
Vaughan, D. A., Tirado, E., Garcia, D., Datta, V., & Sakkas, D. (2020). DNA fragmentation of sperm: A radical examination of the contribution of oxidative stress and age in 16 945 semen samples. *Human Reproduction, 35*(10), 2188–96. https://doi.org/10.1093/humrep/deaa159
Well, D., Yang, H., Houseni, M.,Iruvuri, S., Alzeair, S., Sansovini, M., Wintering, N., Alavi, A., & Torigian, D. A. (2007). Age-related structural and metabolic changes in the pelvic reproductive end organs. *Seminars in Nuclear Medicine, 37* (3), 173–184, https://doi.org/10.1053/j.semnuclmed.2007.01.004
Wright, H., & Jenks, R. A. (2016). Sex on the brain! Associations between sexual activity and cognitive function in older age. *Age and Ageing*, *45*(2), 313–317. https://doi.org/10.1093/ageing/afv197
Wright, H., Jenks, R. A., & Demeyere, N. (2019). Frequent sexual activity predicts specific cognitive abilities in older adults. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *74*(1), 47–51. https://doi.org/10.1093/geronb/gbx065
Yaacov, D., Nelinger, G., & Kalichman, L. (2022). The effect of pelvic floor rehabilitation on males with sexual dysfunction: A narrative review. *Sexual Medicine Reviews, 10*(1), 162–167. https://doi.org/10.1016/j.sxmr.2021.02.001
Zhu, Q. X., Meads, C., Lu, M. L., Wu, J.-Q., Zhou, W.-J., & Gao, E.-S. (2011). Turning point of age for semen quality: A population-based study in Chinese men. *Fertility and Sterility, 96*(3), 572–576, https://doi.org/10.1016/j.fertnstert.2011.06.058

13.3 Cognition in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Define postformal thinking
- Describe the characteristics of memory and problem-solving in middle adulthood
- Identify changes in intelligence across middle adulthood
- Explain how creativity is expressed in middle adulthood

Charlie was only twenty-two years old when they began graduate studies in science. They spent five years earning a PhD in biology and decades afterward teaching, conducting research, attending conferences, and reading the published work of others. It was not until age fifty years that they won an international prize for their groundbreaking work on the effects of climate change. Charlie's research has spurred important discussion and debate, and their innovative ideas were founded on years of varied experiences in the classroom, lab, and in the field. Charlie's intellectual success demonstrates how the journey of adulthood allows us to observe, learn, make connections, and build the wisdom that allows midlife adults to produce important intellectual contributions to science, art, and everyday life.

Overall, cognition seems to reach a pinnacle in early adulthood, but changes in cognition in middle age appear to bring some advantages, including the development of expertise and improved creativity. In this section, you'll review how changes in adult memory, problem-solving, and intelligence facilitate continued cognitive growth in middle adulthood.

Formal and Postformal Thought

According to Piaget's theory of cognitive development, the final stage of cognition is formal operational thought, characterized by the capacity for hypothetical, deductive, and abstract thinking. It emerges in adolescence and continues throughout adulthood, though Piaget himself and others have argued that demonstration of some aspects of formal operational thinking is not universal among adults and may be most evident in an adult's area of expertise (Kuhn, 2008; Piaget, 1972). Other researchers have argued that some adults develop beyond formal operational thinking to a stage known as postformal thought (Perry, 1968). In **postformal thought**, the intuitive thinking that comes from experience is combined with the logic of formal operations to produce a cognitive style known as relativism. It is recognized in **relativism** that some problems or dilemmas may have more than one viable solution, depending on a person's perspective and priorities.

The differences in cognition between formal and postformal thought are subject to debate, and the evidence is unclear as to whether this style of thinking qualifies as a more advanced stage and whether it is typical of adult thinking (Blanchard-Fields, 2001). Whatever the case, changes in cognition that occur in middle adulthood are best understood as changes in the way individuals perceive and process information, rather than as overall advancements or declines. It is possible that the use of relativistic thinking is, in fact, an outcome of the experiences and wisdom accumulated from the lived experience of adults over the lifespan.

Memory and Problem-Solving

Perhaps the most noted research in the understanding of cognition over the course of adulthood is the Seattle Longitudinal Study. The study was initiated by K. Warner Schaie in 1956,, and since that time, it has assessed the psychological and cognitive development of 6,000 adults with ages ranging from 22 to over 100 years old (Seattle Longitudinal Study, 2024). The longitudinal nature of this study provides a great advantage over the previous cross-sectional studies in understanding individual changes in cognitive development because cross-sectional approaches were confounded by generational differences known as cohort effects. The results from the Seattle Longitudinal Study provide insight into changes in adult cognition as people age.

The longitudinal study found that different types of memory and cognitive processes exhibit different trajectories with age. Verbal and semantic memory—long-term recall of words or concepts—remain consistent and even somewhat increase until the end of middle adulthood (Hedden & Gabrieli, 2004; Park et al., 2002; Schaie, 1996). Working memory—the ability to process new and previously encoded information during short-term cognitive tasks—becomes somewhat less efficient as processing speed and short-term storage capacity peak in young adulthood and gradually decline as we age (Park et al., 2002; Rhodes et al., 2019; Schaie, 2003). However, effective memory strategies and engaging in physical exercise can improve working memory ability in middle adulthood (Hertzog et al., 2019; Liu & Lachman, 2019).

Practical problem-solving on everyday tasks, such as purchasing goods or figuring out a bus schedule, shows improvement in middle adulthood, largely from accumulated experience (Chen et al., 2017). Another advantage of middle adulthood is the development of expertise over the course of many years in a career or field of interest. Through continued deliberate practice and engagement, experts in a field can use automatic processing, better strategies, and more creativity in problem-solving for their domain of experience (Ericsson, 2020).

A model of physical and cognitive aging proposed by Nancy Denney suggests that the development of physical abilities and the development of cognitive abilities both follow a similar pattern, with an early adulthood peak and gradual decline (Denney, 1984). Individuals can influence their own peaks by prioritizing the practice of particular skills. Those skills that are not practiced and that therefore peak at lower levels will decline sooner during the aging process. For example, more time spent in formal education results in higher cognitive functions in middle adulthood (Lövdén et al. 2020). As you find in Chapter 15 Physical and Cognitive Development in Late Adulthood (Age 60 and Beyond), diagnosis of cognitive declines is based on comparing individual performance to a universal average, and thus those with higher peaks will take longer to decline to a

level at which a diagnosis of cognitive impairment may be made.

IT DEPENDS

Brain Games

You may have seen advertisements about games that claim to increase cognitive functions and reduce the chances of having Alzheimer's disease. These products often include puzzles, riddles, and memory games.

Regular practice of cognitive skills helps advance cognitive abilities and promotes the attainment of higher developmental peaks. Research thus far in cognitive skills training for reduction in cognitive decline is promising but inconclusive. It appears that engaging in games, crafts, and social activity is associated with reduced incidence of cognitive impairment (Krell-Roesch et al., 2017).

Preventing Alzheimer's with Cognitive Training (PACT) is a clinical trial studying whether there may be a causal link with computerized cognitive training and the reduction of cognitive impairment (Nicholson et al., 2022). In the meantime, the Alzheimer Society of Canada encourages adults to "cross-train your brain" with a variety of activities, such as playing chess or sudoku, learning a new language, and even playing video games to promote cognitive flexibility (Alzheimer Society of Canada, n.d.).

Intelligence and Wisdom

Psychologists have conceptualized intelligence through a variety of theories that are useful in framing how the development of intelligence may vary, depending on how it is defined and measured. As discussed in 7.3 Intelligence in Middle Childhood, Robert Sternberg's triarchic theory of intelligence proposes that intelligence can be divided into three abilities: analytical, creative, and practical. Sternberg argued that while each of these intellectual components allows people to adapt to changing life demands and circumstances, how they are applied and the priority that they have in our lives will change with age (Berg & Sternberg, 1985). For example, analytical intelligence uses academic knowledge and computation, which can be applied in middle adulthood within a given career or field of interest. Practical intelligence is needed for solving everyday challenges, and as research has shown, adults exhibit improvement in this type of problem-solving as a result of lived experience (Chen et al., 2017). The innovative problem-solving that belies creative intelligence is often built on existing expertise in a given area, and as you have learned, adults continue to increase their semantic memory and expertise throughout middle adulthood.

The value of accumulated knowledge or wisdom in supporting the triarchic domains of intelligence may remind you of Raymond Cattell's theory of intelligence, also introduced in 7.3 Intelligence in Middle Childhood. Sternberg and colleagues agree and assert that their theory of how intelligence develops in adulthood is certainly compatible with that of Cattell (Berg & Sternberg, 1985). Cattell's theory of intelligence suggests two primary components of intelligence. Crystalized intelligence consists of accumulated abilities in long-term memory, such as knowledge and vocabulary. Because crystallized intelligence is developed through experience, it exhibits continuous and steady increases throughout the lifespan. Fluid intelligence, which is the ability to reason and solve novel and abstract problems, peaks in early adulthood, remains relatively steady in the middle adult years, and declines as individuals enter older adulthood (Figure 13.11).

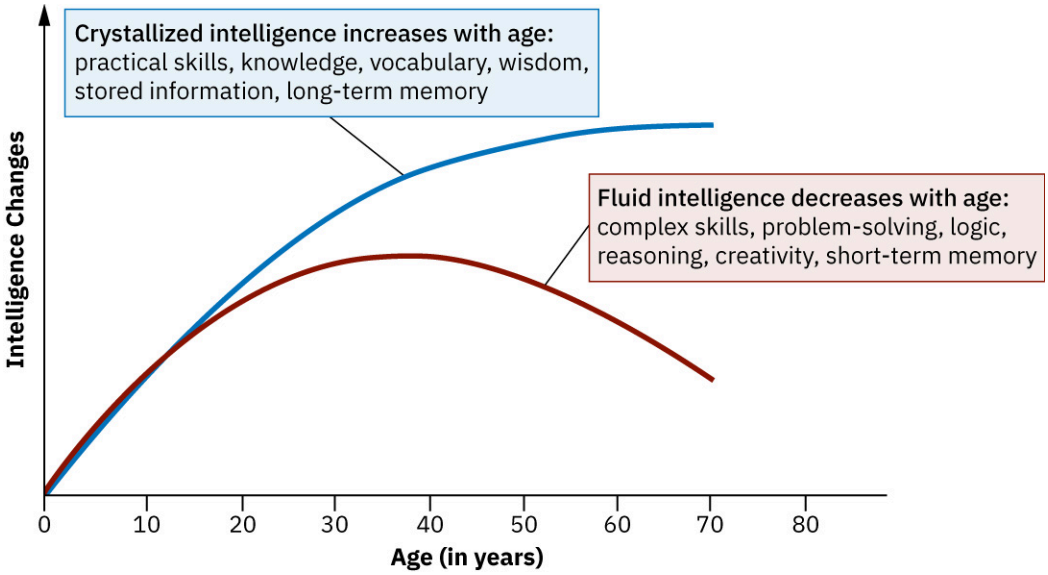


FIGURE 13.11 Adults in middle adulthood demonstrate gradual decrease in fluid intelligence and gradual increase in crystallized intelligence. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

There are also generational changes in performance on intelligence tests, known as the **Flynn effect**. The Flynn effect occurs when newer generations perform better on intelligence tests than previous generations. This doesn't mean, however, that younger generations are more intelligent than their older counterparts. According to James Flynn, who discovered the phenomenon, explanations include improved access to nutrition and education over time that promote physical and cognitive growth and well-being (Flynn et al., 2012).

Cultural context influences how people think about and apply intellectual abilities (Benson, 2003; Warne, 2020). While Western cultures often perceive intelligence as an analytical skill that helps us to categorize concepts and form arguments, East Asian cultures are more likely to emphasize the interpersonal implications of intelligence and how it helps us to effectively interact with others (Nisbett, 2004; Yang & Sternberg, 1997).[1] Different cultures have also been found to vary in the extent to which they foster and value practical, as opposed to academic, intelligence (Sternberg et al., 2001).

Wisdom is frequently associated with age, and like many cognitive abilities, it develops over time. Like intelligence, conceptions of wisdom may vary cross-culturally, but **wisdom** is broadly defined by the German psychologist Paul Baltes as "expert knowledge concerning the fundamental pragmatics of life," a description that incorporates aspects of self-understanding, knowledge, prosocial values, and openness (Bangen et al., 2013). Wisdom can be measured using performance or self-report measurements. Performance measures, such as the Berlin Wisdom Paradigm developed by Baltes and Staudinger (2000), ask respondents to advise fictional characters faced with life decisions: for example, "In reflecting over their life, people sometimes realize that they have not achieved what they had once wanted to achieve. What could a person consider and do in such a situation?" The participant's level of wisdom is then evaluated based on their response. Self-report measurements, such as the Brief Wisdom Screening Scale (Glück et al., 2013), ask respondents to indicate how much they agree with statements such as, "I can accept the impermanence of things" or "I have grown as a result of the losses I have suffered."

1 The study (Nisbett, 2004) uses the terms "East Asian" and "Western." The study (Yang & Sternberg, 1997) uses the terms "Western" and "Eastern."

Research findings about aging and wisdom are complicated. Many aspects of the trait are only marginally predicted by age, if at all (Dong et al., 2023). Across findings, it seems wisdom is less about age and more closely related to applying life experience to difficult life problems or social issues (Figure 13.12). Even personality factors like openness and creativity come into play, though perceptions of the traits associated with wisdom vary cross-culturally. In Western cultures, such as America and Australia, traits such as "experienced" and "knowledgeable" are most closely associated with wisdom. In Eastern cultures, such as India and Japan, wisdom is more closely associated with the social skill of "discretion" (Takahashi & Bordia, 2000).[2]

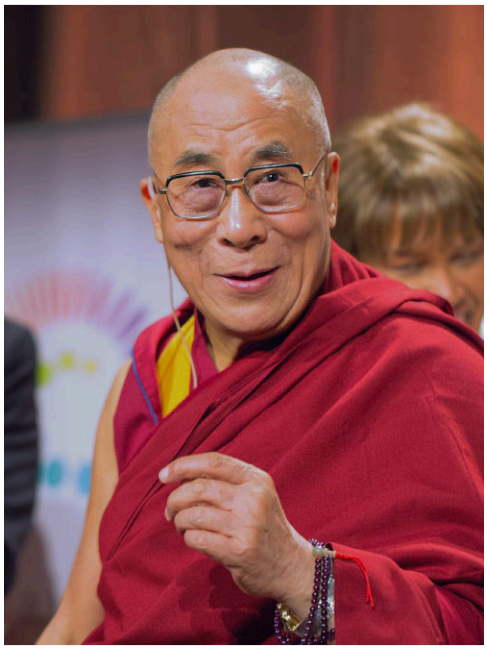


FIGURE 13.12 While wisdom is often associated with age, some research suggests that it is more closely related to applying life experience to difficult life problems or social issues. (credit: "Tenzin Gyatso - 14th Dalai Lama (2012)" by Christopher Michel/Flickr, CC BY 2.0)

Creativity

While young creative minds may be more popularly visible in some domains, such as music and media, people often reach greater moments of creativity in middle age and beyond. A study of famous painters from the nineteenth and twentieth centuries found that these artists typically created their most valuable paintings when they were forty-two years old (Franses, 2013). Creativity is often thought of as only an artistic quality, but it is derived from cognitive abilities that can be applied in several domains, including science. In fact, an examination of scientists who won the Nobel Prize for scientific breakthroughs found that since the year 2000, most prize-winning physicists and chemists were well into middle adulthood when they made their discoveries, with physicists being forty-eight years old on average (Jones & Weinberg, 2011). As we age, we learn what works best for each of our own creative processes, allowing us to maximize individual creativity.

Creativity can be generated by both divergent and convergent thinking. Divergent thinking allows us to develop many solutions to a problem when there is no clear solution (Guilford, 1967). This can mean applying the abilities of fluency, flexibility, originality, and elaboration. If you had to come up with all the things you might do with a traditional red brick, for example, you produce many ideas (fluency), a wide variety of ideas (flexibility), unusual ideas (originality), and add complex details to your ideas (elaboration) (Figure 13.13). Convergent thinking is the creative ability to determine a best solution to produce a desired outcome. In the tale of the "Three Little Pigs" who each construct a house to keep safe from the big bad wolf, the pig who

2 This study (Takahashi & Bordia, 2000) uses the terms "Western" to include "American" and "Australian" and uses "Eastern" to include "Indian" and "Japanese."

chooses to build his house from bricks (and not straw or sticks) demonstrates convergent thinking.

FIGURE 13.13 Creativity is the ability to generate a variety of ideas that demonstrate both divergent and convergent thinking. (credit left: "brick wheel stopper" by Kerry Ceszyk/Flickr, CC BY 4.0; credit middle: modification of work "Our new firepit" by Kim Siever/Flickr, Public Domain; credit right: modification of work "Арка, которая задавала стиль всему зданию" by Alexander/Flickr, Public Domain)

LINK TO LEARNING

Many historical individuals like Robert Frost, Virginia Woolf, and Charles Darwin have produced their best work around the age of forty years and continued into their fifties and beyond (Jones & Weinberg, 2011; Simonton, 2000). Check out this list of great minds compiled by the American Alliance of Museums (https://openstax.org/r/104GreatMinds) to read about how people often continue to produce and earn recognition well into late adulthood.

References

Alzheimer Society of Canada. (n.d.). *Challenging your brain.* Alzheimer Society of Canada. https://alzheimer.ca/en/help-support/im-living-dementia/living-well-dementia/challenging-your-brain

Baltes, P. B., & Staudinger, U. M. (2000). Wisdom: A metaheuristic (pragmatic) to orchestrate mind and virtue toward excellence. *American Psychologist, 55*(1), 122–136. https://doi.org/10.1037/0003-066X.55.1.122

Bangen, K. J., Meeks, T. W., & Jeste, D. V. (2013). Defining and assessing wisdom: A review of the literature. *The American Journal of Geriatric Psychiatry, 21*(12), 1254–1266. https://doi.org/10.1016/j.jagp.2012.11.020

Benson, E. (2003). Intelligence across cultures. *American Psychological Association Monitor, 34*(2), 56. https://www.apa.org/monitor/feb03/intelligence

Berg, C. A., & Sternberg, R. J. (1985). A triarchic theory of intellectual development during adulthood. Developmental Review, 5(4), 334–370. https://doi.org/10.1016/0273-2297(85)90017-6

Blanchard-Fields, F. (2001). Adult cognitive development: Post-Piagetian perspectives. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social & behavioral sciences* (pp. 132–135). Pergamon. https://doi.org/10.1016/B0-08-043076-7/01564-3

Chen, X., Hertzog, C., & Park, D. C. (2017). Cognitive predictors of everyday problem solving across the lifespan. *Gerontology, 63*(4), 372–384. https://doi.org/10.1159/000459622

Denney, N. W. (1984). A model of cognitive development across the life span. *Developmental Review, 4*(2), 171–191. https://doi.org/10.1016/0273-2297(84)90006-6

Dong, M., Weststrate, N. M., & Fournier, M. A. (2023). Thirty years of psychological wisdom research: What we know about the correlates of an ancient concept. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science, 18*(4), 778–811. https://doi.org/10.1177/17456916221114096

Ericsson, K. A. (2020). Towards a science of the acquisition of expert performance in sports: Clarifying the differences between deliberate practice and other types of practice. *Journal of Sports Sciences, 38*(2), 159–176. https://doi.org/10.1080/02640414.2019.1688618

Flynn, J., Shaughnessy, M. F., & Fulgham, S. W. (2012). Interview with Jim Flynn about the Flynn effect. *North American Journal of Psychology, 14*(1), 25–38.

Franses, P. H. (2013). When do painters make their best work? *Creativity Research Journal, 25* (4), 457–462, https://doi.org/10.1080/10400419.2013.843912

Glück, J., König, S., Naschenweng, K., et al. (2013). How to measure wisdom: Content, reliability, and validity of five measures. *Frontiers in Psychology, 4.* https://doi.org/10.3389/fpsyg.2013.00405

Guilford, J. P. (1967). *The nature of human intelligence.* McGraw Hill.

Hedden, T., & Gabrieli, J. D. E. (2004). Insights into the ageing mind: A view from cognitive neuroscience. *Nature Reviews Neuroscience, 5*(2), 87–96. https://doi.org/10.1038/nrn1323

Hertzog, C., Lustig, E., Pearman, A., & Waris, A. (2019). Behaviors and strategies supporting everyday memory in older adults. *Gerontology, 65*(4), 419–429. https://doi.org/10.1159/000495910

Jones, B. F., & Weinberg, B. A. (2011). Age dynamics in scientific creativity. *PNAS, 108*(47), 18910–18914, https://doi.org/10.1073/pnas.1102895108

Krell-Roesch, J., Vemuri, P., Pink, A., Roberts, R. O., Stokin, G. B., Mielke, M. M., Christianson, T. J. H., Knopman, D. S., Petersen, R. C., Kremers, W. K., & Geda, Y. E. (2017). Association between mentally stimulating activities in late life and the outcome of incident mild cognitive impairment, with an analysis of the APOE ε4 genotype. *JAMA Neurology, 74*(3), 332–338. https://doi.org/10.1001/jamaneurol.2016.3822

Kuhn, D. (2008). Formal operations from a twenty-first century perspective. *Human Development, 51*(1), 48–55. https://doi.org/10.1159/000113155

Liu, Y., & Lachman, M. E. (2019). Socioeconomic status and parenting style from childhood: Long-term effects on cognitive function in middle and later adulthood. *The Journals of Gerontology: Series B, 74*(6), e13–e24. https://doi.org/10.1093/geronb/gbz034

Lövdén, M., Fratiglioni, L., Glymour, M. M., Lindenberger, U., & Tucker-Drob, E. M. (2020). Education and cognitive functioning across the life span. *Psychological Science in the Public Interest : A Journal of the American Psychological Society, 21*(1), 6–41. https://doi.org/10.1177/1529100620920576

Nicholson, J. S., Hudak, E. M., Phillips, C. B., Chanti-Ketterl, M., O'Brien, J. L., Ross, L. A., Lister, J. L., Burke, J. R., Potter, G., Plassman, B. L., Woods, A. J., Krischner, J., & Edwards, J. D. (2022). The preventing Alzheimer's with cognitive training (PACT) randomized clinical trial. *Contemporary clinical trials, 123*, Article 106978. https://doi.org/10.1016/j.cct.2022.106978

Nisbett, R. E. (2004). *The geography of thought.* Free Press.

Park, D. C., Lautenschlager, G., Hedden, T., Smith, A.D., & Smith, P. K. (2002). Models of visuospatial and verbal memory across the adult life span. *Psychology and Aging, 17*(2), 299–320. https://doi.org/10.1037/0882-7974.17.2.299

Paulhus, D., Wehr, P., Harms, P., & Strasser, D. (2002). Use of exemplar surveys to reveal implicit types of intelligence. *Personality and Social Psychology Bulletin, 28,* 1051–1062. https://doi.org/ 10.1177/01461672022811004

Perry, W. B. (1968). *Forms of intellectual and ethical development in the college years: A scheme.* Hold, Rinehart, and Winston.

Piaget, J. (1972). Intellectual evolution from adolescence to adulthood. *Human Development, 15*(1), 1–12. https://doi.org/10.1159/000271225

Rhodes, S., Jaroslawska, A. J., Doherty, J. M., Naveh-Benjamin, M., Cowan, N., Camos, V., Barrouillet, P., & Logie, R. H. (2019). Storage and processing in working memory: Assessing dual-task performance and task prioritization across the adult lifespan. *Journal of Experimental Psychology: General, 148*(7), 1204. https://doi.org/10.1037/xge0000539
Schaie, K. W. (1996). *Intellectual development in adulthood: The Seattle longitudinal study*. Cambridge University Press.
Schaie, K.W. (2003, January 23–24). *Cognitive aging*. National Research Council. https://sls.psychiatry.uw.edu/wp-content/uploads/2020/03/Cognitive-aging2003.pdf
Schaie K. W., & Willis, S. L. (2010). The Seattle longitudinal study of adult cognitive development. *ISSBD Bull. 2010; 57*(1), 24–29. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3607395/
Seattle Longitudinal Study. (2024). *Seattle longitudinal study*. Department of Psychiatry and Behavioral Sciences, UW Medicine. https://sls.psychiatry.uw.edu/
Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American Psychologist, 55*(1), 151–158. https://doi.org/10.1037/0003-066X.55.1.151
Sternberg, R. J., Nokes, C., Geissler, P. W., Prince, R., Okatcha, F., Bundy, D. A., & Grigorenko, E. L. (2001). The relationship between academic and practical intelligence: A case study in Kenya. *Intelligence, 29*(5), 401-418. https://doi.org/10.1016/S0160-2896(01)00065-4
Takahashi, M., & Bordia, P. (2000). The concept of wisdom: A cross-cultural comparison. *International Journal of Psychology, 35*(1). https://doi.org/ 10.1080/002075900399475
Warne, R. T. (2020). Intelligence is a Western concept that does not apply to non-Western cultures. In *In the know: Debunking 35 myths about human intelligence* (pp. 46–51). Cambridge University Press.
Yang, S.-Y., & Sternberg, R. J. (1997). Conceptions of intelligence in ancient Chinese philosophy. *Journal of Theoretical and Philosophical Psychology, 17*(2), 101–119. https://doi.org/10.1037/h0091164

13.4 Maintaining Health and Well-Being in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify major health concerns of middle adulthood
- Describe behaviors and lifestyle choices that promote well-being
- Identify the psychologically relevant features of work, career, and work-life balance

Carson remembers her twenties well. She was proving herself in a stressful job and frequently grabbed a quick (and not necessarily healthy) meal to eat at her desk while working late. She would leave the office around 7 or 8 p.m., meet up with friends at a local hangout, sleep for five or six hours, and wake up to do the same the next day. Fast-forward twenty years, and Carson is a forty-five-year-old mother of two school-age children and is also looking after older parents who have age-related health issues. She and her spouse are not close to retirement, but they enjoy thinking about the trips they'll take together someday when they have more time and freedom. She wants to be there—and be healthy—on those trips, and she wants to live as long as possible to enjoy future generations of her family. She knows she needs to make some lifestyle changes to make that more likely.

Around age forty years, many individuals become more aware of aging and longevity, as has occurred with Carson. Health-care providers add more tests at routine checkups, and while mortality in middle age isn't common, most people know someone who died younger than expected. As individuals enter this life stage, they begin to think more about what constitutes a healthy lifestyle and how to achieve their health goals.

Health Concerns in Middle Adulthood

Until middle adulthood, the leading cause of death is unintentional injury due to accidents. However, between the ages of thirty-five and sixty-four years, the leading cause of death shifts from accidents to health-specific issues like cancers and heart disease (Figure 13.14) (Centers for Disease Control and Prevention [CDC], n.d.a). Learning how cancer, cardiovascular disease, and metabolic and endocrine disorders become health issues to monitor in middle adulthood can help you make choices that promote healthy living and support an enriching life.

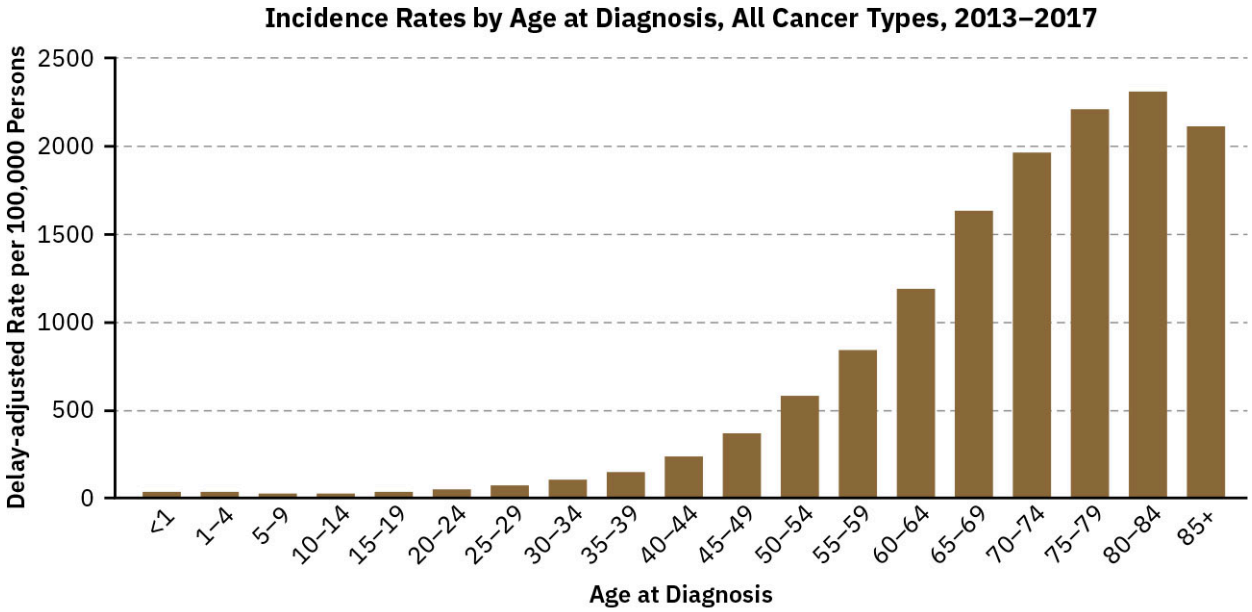
Rank as Leading Cause of Death	Early/Emerging Adulthood (ages 18–29)	Middle Adulthood (ages 30–59)
1	Unintentional injury **51%** (126,841)	Cancer **25%** (468,489)
2	Suicide **19%** (46,034)	Unintentional injury **22%** (413,562)
3	Homicide **16%** (39,871)	Heart Disease **21%** (407,325)
4	Cancer **5%** (11,586)	COVID **7%** (129,262)
5	Heart disease **4%** (10,331)	Suicide **6%** (119,014)

Source: WISQARS Leading Causes of Death Visualization Tool. (2024) Centers for Disease Control and Prevention.

FIGURE 13.14 In middle adulthood, the leading causes of death shift from unintentional injury and suicide to cancer and unintentional injury. (data source: National Center for Health Statistics, 2021; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Cancer

Cancers form when the body's normal elimination of old cells is disrupted, and damaged cells continue to reproduce. Numerous risk factors are associated with the development of cancers, including genetics, lifestyle, and environmental influences. However, the most significant risk factor for cancer is aging, as shown in Figure 13.15. The ten most diagnosed cancers in the United States have an average age of diagnosis of sixty years or older; the average age of all cancer diagnoses is sixty-six years (National Cancer Institute, 2021).



Source: National Cancer Institute/SEER. (2021). National Institutes of Health.

FIGURE 13.15 While the average age for all cancer diagnoses is sixty-six years, risk begins to noticeably increase in

middle adulthood, particularly for certain cancers, such as breast cancer, colorectal cancer, thyroid cancer, and pancreatic cancer. (data source: National Cancer Institute/SEER, 2021; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

In 2020, the National Cancer Institute (NCI) identified the increasing incidence of certain early-onset cancers (defined as those diagnosed at age fifty years or younger) as an emerging research priority. In particular, the NCI wants to know why certain cancers, such as breast cancer, colorectal cancer, thyroid cancer, and pancreatic cancer, are occurring increasingly earlier in life, and to develop better procedures for early detection (NCI, 2020). Some of these cancers may not be increasing in occurrence but rather are being detected and diagnosed earlier due to an increase in screening. However, researchers are also investigating whether people are being exposed to more risk factors early in life. Early correlational research has identified alcohol use, antibiotics, obesity, sedentary lifestyle, low sleep quality, smoking, diabetes, and a diet high in saturated fats, red meat, sugar, and processed foods as possible risk factors; however, more experimental research is needed to draw conclusions about cause and effect (Ugai et al., 2022). Additionally, research into cultural differences shows that the absence of education and limited access to screening tools such as mammography, breast self-examination, and inconsistent health care can contribute to the early onset of some cancers. For instance, Badr and colleagues (2018) found that Lebanese women aged forty to forty-nine years were more likely to develop more aggressive forms of breast cancer at younger ages compared to women in Western and Middle Eastern countries but were less aware of the availability and preventive value of breast cancer screening.[3]

LIFE HACKS

Cancer Prevention

Cancer can happen to anyone, regardless of age, and it can be caused entirely by factors outside an individual's control, such as biological aging, genetic predisposition, and environmental contaminants. However, based on studies of modifiable risk factors, meaning those over which an individual has some control, scientists and doctors make several recommendations to reduce cancer risk (NCI, 2023). Here are a few of these recommendations:

- *Quit smoking or don't smoke.* Cigarette smoking is the leading cause of preventable disease and death in the United States and accounts for 30 percent of all cancer deaths. Smoking is most common among midlife adults and is higher among those with low education and low income (CDC, 2023a).
- *Ask your doctor about vaccines* that prevent viruses associated with cancer, including the human papillomavirus (HPV) vaccine (which reduces risk of cancers of the cervix, penis, vagina, and anus) and the hepatitis B vaccine (which reduces risk of liver cancer).
- *Adopt healthy dietary and drinking habits.* Eating a low-fat, high-fiber diet reduces the risk of colorectal cancer. Decreasing alcohol consumption lowers the risk of various cancers, including oral and esophageal cancers.

LINK TO LEARNING

Nicotine is one of the active ingredients in cigarettes and other tobacco or vaping products linked to lung and other cancers, and it is considered highly addictive. According to the National Institute on Drug Abuse, most adult smokers want to quit but are unsuccessful in doing so.

In this video, learn how cigarettes harm us (https://openstax.org/r/104CigartteHarm) and whether our bodies can recover if we stop.

3 This study (Badr et al., 2018) uses the term "Western" for "Lebanese-American" participants and uses "Middle Eastern" for "Lebanese" participants in Lebanon.

If you or someone you know wants to quit smoking, the CDC's tips for quitting smoking (https://openstax.org/r/104QuitSmoking) may be able to help.

Cardiovascular Disease

While cardiovascular disease (CVD) is not random, it can often be unexpected. Among the contributing factors is hypertension or high blood pressure, which occurs when the blood pushes against the artery walls with high force. Another factor that increases risk of CVD is high cholesterol (Figure 13.16). Cholesterol is a component of cell membranes made up of proteins and fats. High-density lipoprotein (HDL) is considered good cholesterol and cycles through the blood and liver. Low-density lipoprotein (LDL) is considered problematic, because if present in high amounts, it will stick to the lining of blood vessels. This buildup hardens the walls of the arteries and increases CVD and stroke risk. High levels of triglycerides, which are fats that can build up as plaque in the arteries, also increase the risk of heart disease (Curfman, 2019).

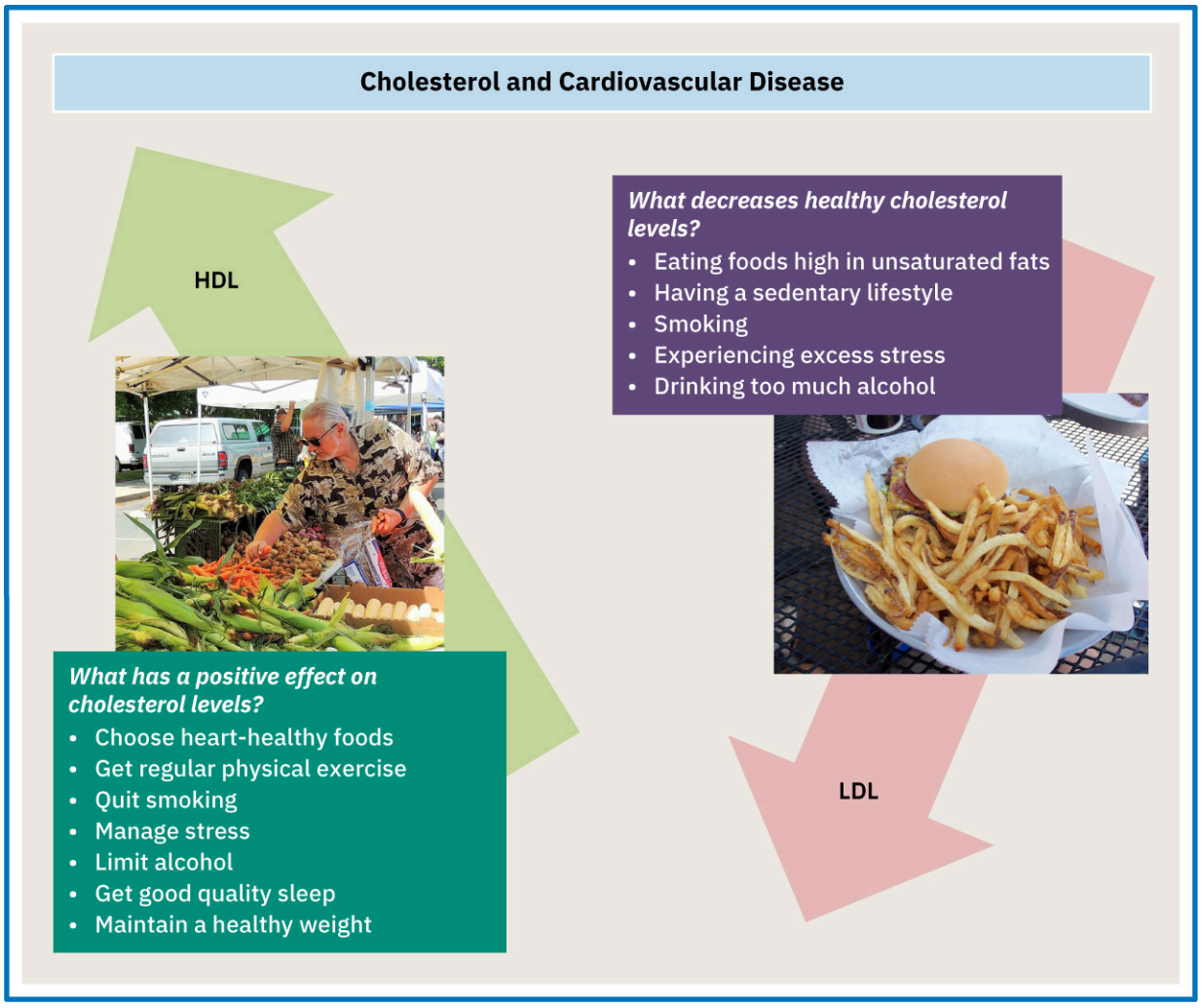


FIGURE 13.16 Not all cholesterol is bad cholesterol. High-density lipoprotein (HDL) is considered good cholesterol and cycles through the blood and liver. In contrast, high levels of low-density lipoprotein (LDL) can cause buildup in the arteries and increase the risk of cardiovascular disease. Foods high in LDL should not be a part of your regular diet. (credit left: modification of work "Fresh farmer's market corn" by Colorado State University Extension/Flickr, Public Domain; credit right: modification of work "Lunch at Mama Burger" by Deborah Lee Soltesz/Flickr, Public Domain)

Men and women have different experiences with CVD. Men have more overall occurrences of and fatalities

from CVD. However, following a heart attack, women typically remain in the hospital longer than men and are more likely than men to be readmitted to the hospital for heart-related symptoms within the year following an initial heart attack (American College of Cardiology, 2023; Bosworth et al., 2000; Suman et al., 2023). Heart attack symptoms also vary between men and women, as shown in Figure 13.17. Men's symptoms include chest pain, lightheadedness, stomach pain, and shortness of breath. Women's symptoms include back and neck pain, anxiety, dizziness, and shortness of breath (Katella, 2023).

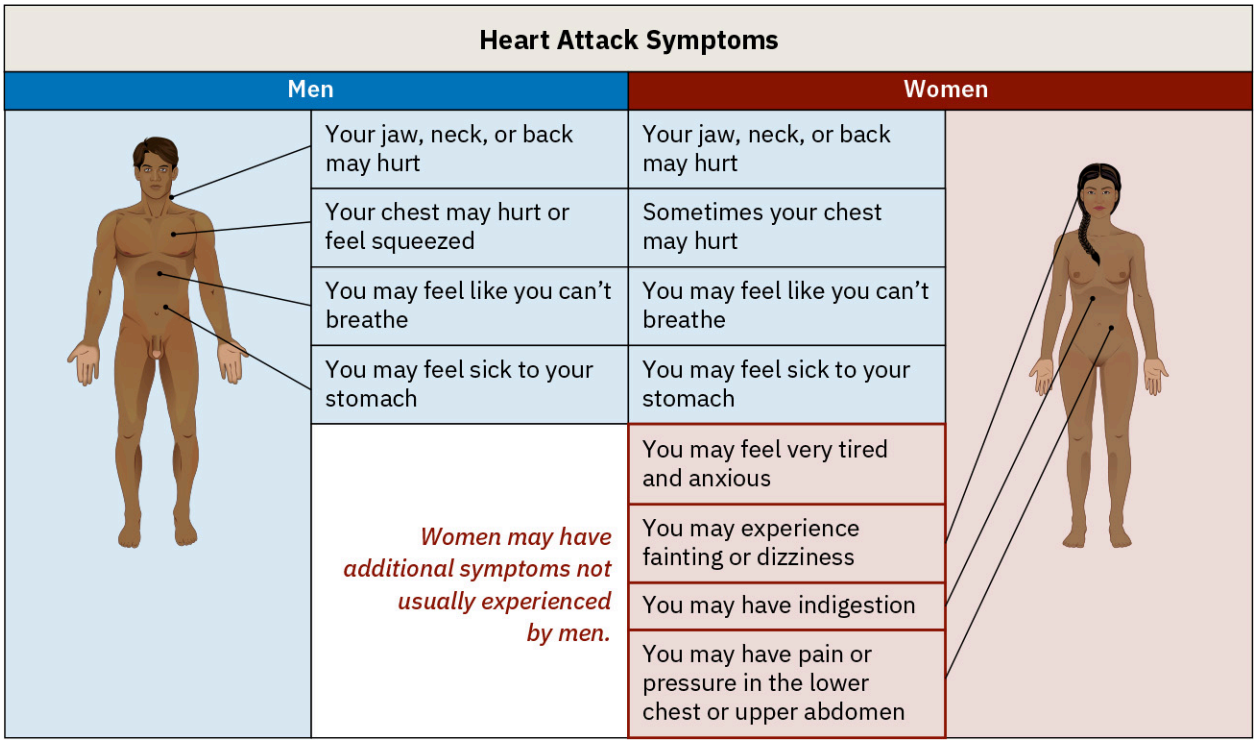


FIGURE 13.17 In middle adulthood, cardiovascular disease is a major health risk for all adults. The symptoms of a heart attack may be different for men and women. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Unintentional Injuries

Unintentional fatal injuries are most often caused by accidental poisoning/drug overdoses, motor vehicle accidents, drowning, and falls. The leading cause of drug overdose deaths is from opioids, used either illegally or through prescription overuse or misuse (CDC, 2024a). Fatality risk for opioid overdose is highest between ages forty and fifty years (Dydyk et al., 2024). While the rate of opioid fatalities is on the rise, this alarming trend can be addressed through more careful monitoring of prescribed opioids and treatment for opioid dependence (CDC, 2024a). The number of motor vehicle crash deaths has decreased substantially in the last several decades due, in part, to the increased use of seat belts by drivers and passengers (Insurance Institute for Highway Safety, 2024).

Body Weight and Diabetes

Body mass index (BMI) is a height-for-weight measurement calculated by dividing a person's weight by their height. According to the World Health Organization (WHO), if the resulting BMI is thirty or higher, the person has obesity (WHO, 2021). The rate of obesity increases in middle age, given age-related loss of muscle to fat and a typically slower metabolic rate. In the United States, 44 percent of adults forty to fifty-nine years of age are obese, with rates somewhat higher among Black adults (49 percent) and lowest among Asian adults (16 percent) (CDC, 2024b). That said, BMI alone is considered an imperfect measure of general health; it is best interpreted in the context of other individual health indexes as well as a person's gender, age, race, and ethnicity (Berg, 2023).

Obesity is generally associated with an increased risk of high blood pressure. Obesity is also associated with a higher risk of cancer (American Cancer Society, 2023) and insulin resistance. Insulin is a hormone that helps the body convert blood sugar into energy, thereby regulating blood sugar levels. If body cells become resistant or unresponsive to insulin, chronic high blood sugar may result. Metabolic syndrome is a related condition in which obesity and insulin resistance interact to increase risks of heart disease, stroke, and diabetes.

Diabetes is an easily diagnosable chronic condition in which the pancreas fails to produce enough insulin to break down sugar in the bloodstream. Type 2 diabetes is known as adult-onset diabetes, and risk factors include family history, age, weight, and sedentariness. The risk of fatality from diabetes increases with age. In 2020, more than 500,000 middle-aged adults died from complications of diabetes (CDC, 2024e), and the disease disproportionately affects minority groups (CDC, n.d.b). The chronic nature of poorly regulated diabetes causes complications such as kidney failure, retinopathy, and neuropathy (nerve damage), particularly in the legs and feet. Type 2 diabetes can be managed in the long term through a combination of a low-sugar diet, regular exercise, and prescribed medications to control blood glucose levels.

Warning signs that precede the onset of type 2 diabetes can provide opportunities for prevention. Prediabetes is a condition in which the blood sugar level is higher than normal but not high enough to be considered type 2 diabetes. More than one-third of all U.S. adults are prediabetic, but most do not know it. Early detection of prediabetes is important, because a doctor-recommended change to diet, exercise, and weight management can prevent the progression to type 2 diabetes (CDC, 2024d).

LINK TO LEARNING

Want to learn more about your risk for type 2 diabetes and how lifestyle changes to diet and exercise can help prevent and manage this chronic disease? The Centers for Disease Control and Prevention offer a free online Prediabetes Risk Test (https://openstax.org/r/104DiabetesTest) so you can learn more.

Stress

Midlife is full of stressors, such as career responsibilities; the demands of raising children; aging parents who might need assistance; and financial responsibilities like rent or mortgages, car loans and credit card debts, and the desire to save for personal retirement or children's future needs. Stress is also a risk factor for CVD. In the 1950s, cardiologists Meyer Friedman and Ray Rosenman proposed a link between CVD and the way stress is conveyed in personality (1959). The personality types they proposed were based on individual differences in the experience of stress. Type A individuals were said to be ambitious, competitive, driven, and more easily alarmed—traits deemed more predictive of CVD than the relaxed and patient qualities of type B individuals. Later work also proposed type C, passive people pleasers (Rymarczyk et al., 2020), and type D, those with greater degrees of anger and hostility (Denollet, 1997; O'Dell et al., 2011). Of all the characteristics, higher hostility appears to be the strongest predictor of CVD.

To help conceptualize how stressors influence overall physical health, researchers have come to use the concept of allostatic load (Figure 13.18). The **allostatic load** is the cumulative health toll of stressors, including the body's biological response (activation of the sympathetic nervous system and release of stress-response neurotransmitters and hormones), as well as secondary health impacts, such as changes in sleep, diet, and substance use patterns (Guidi et al., 2020; McEwan & Seeman, 1999). Allostatic load is often used as a biological indicator of physiological dysregulation due to cumulative wear and tear from chronic stress. High allostatic load is associated with aging effects, such as earlier cognitive declines (D'Amico et al., 2020; Lenart-Bugla et al., 2022; Seeman et al., 1997) and increased mortality (Parker et al., 2022). Specifically, in a recent meta-analytic review, researchers found a 22 percent increased overall mortality risk. They also found a 31 percent increased mortality risk associated with cardiovascular disease. (Parker et al., 2022). Adults who experience chronic inequality—particularly people of color, women, and those living in poverty—are more likely to report experiencing upsetting stressors in a variety of domains, including finances, work,

relationships, and health (Wang et al., 2023). Furthermore, middle-aged adults with depression who experience higher allostatic load were at greater risk of cognitive decline (Perlman et al., 2022). Those with intersectional identities are at greatest risk of accumulating a higher allostatic load and the associated aging effects, through a process that Geronimus and colleagues (2006) described as "weathering." "Intersectional identities" is a term used to describe individuals who might experience multiple marginalized identities. For example, when the weathering hypothesis was first introduced it was used to describe the way health declines may impact African American women earlier than non-Hispanic White women due to the cumulative risks associated with experiencing socioeconomic disadvantage (Geronimus, 1992). Current research continues to find evidence of the weathering hypothesis in groups who experience social or economic disadvantage (Forde et al., 2019).

FIGURE 13.18 High allostatic load is associated with earlier cognitive declines and increased mortality in adulthood. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Well-Being in Middle Adulthood

Living a healthy and satisfying lifestyle is important at all ages of life, but it is sometimes easier said than done. Many adults struggle to start and maintain healthy habits as they juggle daily and significant life stressors in midlife. Social support, stress management, and healthy approaches to diet, activity, and sleep can all support well-being.

Social Support and Engagement

According to the stress-buffering effects model (Castillo, 2016), social support can protect adults from stress in three ways:

1. When we feel supported by others, we are less likely to perceive situations as stressful.
2. Social support reduces our body's physiological response to stress.
3. Others can provide us with resources for coping with stress.

Therefore, social support protects mental and physical well-being from the direct and indirect effects of stress (Figure 13.19). For women, social support has been found in some studies to be a better predictor of life satisfaction, wellness, and achievement of health goals than behaviors such as exercising or abstaining from smoking (Denton et al., 2004; Moreno-Murcia et al., 2017). And although received social support gradually decreases during middle adulthood, middle-aged and older adults may not desire or need as much as when they were younger. In fact, "too much" perceived support may interfere with adults' sense of mastery and contribute to them feeling useless or burdensome (Hill et al., 2023).

FIGURE 13.19 Social support is important for protecting both our mental and physical well-being from the direct and indirect effects of stress. (credit: "Black men hugging" by NappyStock/nappy, CC0 1.0)

Participation in social activities is associated with better cognitive function (James et al., 2011), but differs by age and race. Even though younger and middle-aged adults spend more hours outside the home, older adults are five times more likely than their younger counterparts to participate in social clubs and organizations (most likely because they have more free time given reduced professional and caregiving responsibilities). Regardless, social integration (whether measured by hours outside the house or social activity participation) is predictive of global health throughout all stages of adulthood (Cherry et al., 2013). In fact, middle-aged adults may not need to go far to benefit from social engagement. Among both younger and middle-aged adults, positive exchanges with their spouse had a greater effect on lowering symptoms of depression than did positive social exchanges with other relatives and friends (Khan & Aftab, 2013; Okun & Keith, 1998).

Race is also a predictor of differences in types of social engagement and their effects on well-being. While Black and White adults over age fifty-five years report equivalent social network size and perceived social support, Black adults engage in less social activity than their White counterparts (Hamlin et al., 2022).[4] While lower social participation is not associated with decreased cognitive function for Black adults, perceived social support in middle adulthood predicts lowered depression and increased optimism for Black women (Seawell et al., 2014).[5] In response, researchers have suggested that communities examine possible barriers to the social participation of Black community members, including a lack of diversity in community activity organizers and culturally biased programming (Hamlin et al., 2022).

Stress Management

While middle adulthood might be one of the busiest times of life regarding what Erikson termed "generative" pursuits (such as caregiving, leadership, and mentoring), recent research suggests a certain amount of stress is both normative and potentially beneficial. In a study of adults aged twenty-five to seventy-five years, only 10 percent of participants reported no daily stress. Those adults were more likely to be older, unmarried, unemployed men. And while their apparently stress-free lives were associated with higher emotional well-being and fewer health problems, they also exhibited lower cognitive functioning and were less likely to give or receive emotional support. In other words, they were less likely to participate in and experience many of the benefits of midlife generativity (Charles et al., 2021).

So, how do adults make the most of the inherent stress of midlife? Crum and colleagues (2023) suggest

4 This study (Hamlin et al., 2022) uses the terms "non-Hispanic White" and "non-Hispanic Black."
5 This study (Seawell et al., 2014) uses the term "African American."

considering the perspective of Shakespeare's Hamlet: "For there is nothing either good or bad, but thinking makes it so." In other words, your mindset about your life experiences shapes the effects those experiences have on you. Mindset refers to the assumptions and beliefs that guide our expectations and perceptions. To test this assertion, researchers trained employees of a Fortune 500 company to adopt a stress-as-enhancing mindset (Crum et al., 2017). The training included education about the benefits and risks of stress, the role of mindset in coping with stress, and strategies for controlling mindset to mitigate stress. At a one-month follow-up, these employees were more likely to perceive their stress as having potential benefits and to report better physical health and interpersonal interactions at work, compared to a control group. Lowered stress and increased well-being are also related to other health-connected behaviors such as diet, exercise, sleep, and even sexual activity (Dasgupta, 2018).

Diet and Nutrition

A healthy diet is linked to various beneficial health outcomes. As noted earlier, the Mediterranean diet focuses more on what a person eats than on exact portion sizes. Consisting of fruits, vegetables, nuts, healthy unsaturated fats (like olive or avocado oils), and lean meats (such as fish or poultry), this diet is associated with a decreased risk of CVD and premature death (Pant et al., 2023). In the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER), the Mediterranean diet, with the addition of vitamin D and reduced intake of sugar, salt, and alcohol, yielded increases in cognitive performance (Ngandu et al., 2015). Another study, Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND), found benefits to long-term memory (Morris et al., 2015). Eating a well-balanced and nutritious diet promotes cognitive and psychological well-being, in part because of the bidirectional connections between the nerves of the digestive system and the central nervous system, known as the **gut-brain axis** (Appleton, 2018). The nutrients listed in Table 13.1 have all been associated with a lower risk of poor mood and mood disorders (Dasgupta, 2018).

Mood-Boosting Nutrients	Foods Where Found
Antioxidants	Coffee, dark chocolate, fruits and vegetables (such as potatoes and blueberries)
Folate	Dark leafy vegetables, fruit, beans
Vitamin B_{12}	Poultry, fish, eggs, fortified cereals
Vitamin C	Citrus fruits, tomatoes, green and red peppers
Vitamin D	Tuna, fortified milk and cereals
Magnesium	Green leafy vegetables, nuts, whole grains
Selenium	Eggs, seafood, bread
Omega-3 fatty acid	Fish, canola oil, soy
Tryptophan	Nuts, turkey, whole grains

TABLE 13.1 Nutrients That Promote Mental Health (source: Dasgupta, 2018)

To help people make these healthy choices, the National Heart, Lung, and Blood Institute (NHLBI) recommends reading the Nutrition Facts label on packaged foods and paying close attention to "% Daily Values." Aim to consume more foods that have at least 20 percent of your daily recommended servings of potassium, fiber, vitamins C and A, calcium, and iron and eat fewer foods that contain more than 5 percent of your recommended servings of saturated and trans fats, cholesterol, and sodium (NHLBI, 2013).

INTERSECTIONS AND CONTEXTS

Food Deserts

Access to healthy and nutritious foods is difficult for many. Over thirteen million people in the U.S. find themselves living in a low-access food area or "food desert," where nutritious fresh foods are unaffordable and inaccessible (Johnson & Stewart, 2021). The lack of accessibility can be defined geographically as an urban area a mile or more from stores, or a rural area ten miles or more from stores, or it can be defined economically as an area with over 20 percent poverty. Researchers have also coined the related term "food swamp" to refer to areas where fast food and junk food are disproportionately available (Rose et al., 2009). Convenience stores that may have a closer proximity to many low-income areas largely sell highly processed foods, making it difficult for those with less access to transportation to acquire fruits, vegetables, and healthy proteins.

However, some residents living within areas with limited access to nutritious food are experimenting with ways to bridge this nutritional gap. Situated within a food desert, Syracuse University has started to offer a food pantry to students who need affordable access to nutritious food. Nearby Brady Farm runs a Community-Supported Agriculture (CSA) program using vacant urban land to offer locals weekly access to fresh-grown produce as well as education on how to cultivate and cook healthy foods (Hirst, 2023).

After learning that the county surrounding her campus contained fifteen food deserts, University of North Carolina Greensboro Professor Marianne LeGreco worked with community members to organize a farmers' market to provide fresh food to local citizens. LeGreco notes the importance of being inclusive in such programs, such as accepting federal food benefit forms of payment. County officials also received a grant from the United Way to create a mobile produce market (named the Mobile Oasis) to reach residents in a wider area. In addition to food, the Mobile Oasis offers food education, including preparation tips, recipes, cooking utensils, and reusable shopping bags (Sykes, 2015; Institute for Community and Economic Engagement, 2012).

Exercise

Exercise is one of the most useful tools for promoting psychological health and well-being (Singh et al., 2023). What is the best type of exercise? It's difficult to say, because individuals have preferred activities and unique capabilities, plus habits formed in adolescence and early adulthood that continue later in life. The general recommendation is to get 150 minutes of moderately intense physical activity or 75 minutes of vigorous exercise each week (U.S. Department of Health and Human Services, 2018).

Walking can provide moderate-intensity exercise and can sometimes be accomplished during household chores (like vacuuming), workplace activities (like taking stairs rather the elevator), or childcare activities (such as moving around to soothe a fussy infant). In fact, walking is the most common form of moderate exercise for U.S. adults (Dasgupta, 2018). Weight-bearing and strength-training exercises are also important and are recommended twice a week. These are associated with stronger bone density to protect against osteoporosis and better muscle retention to guard against sarcopenia.

Exercise also has mental health benefits. Cardiovascular exercise, such as jogging, dancing, or swimming (also referred to as aerobic exercise or "cardio"), has been found to improve mood and reduce stress (Sharma et al., 2006). Yoga is also an effective way to manage stress and reduce resting heart rate, blood pressure, and stress hormones, such as cortisol (Ross & Thomas, 2010; Wang & Szabo, 2020). It can also improve balance and flexibility (Bhowmik Bhunia & Ray, 2024).

Sleep

Sleep is a critical part of health that is often sacrificed in favor of other obligations, such as work and family care (Basner et al., 2007). Sleep helps to consolidate new memories and flush toxins from the brain (Fulz et al., 2019; Klinzing et al., 2019). Inadequate sleep is associated with an increase in accidents and falls (Bloom et al.,

2009), weight gain (Kobayashi et al., 2013; Patel et al., 2006), slower processing speed and memory (Kaur et al., 2019), increased risk of osteopenia and sarcopenia (Lucassen et al., 2017), and decreased immune health (AlDabal & BaHammam, 2011). It is recommended that middle-aged adults get at least six hours of high-quality sleep per night (Hirshkowitz et al., 2015). Sleep quality is the degree to which a person feels well rested after sleeping, which can be affected by how easily they fall asleep, stay asleep, and wake up, as well as the ease of their progression through sleep cycles, especially with respect to REM-stage sleep (Barnes et al., 2023).

Common middle-adulthood demands of work and family may require adults to get up earlier or go to bed later than desired or needed. They may also introduce stress-related restlessness and interruptions, which further reduce the quantity and quality of sleep. Sleep psychologists have identified a behavior termed "revenge bedtime procrastination," in which individuals postpone sleep at the end of the day in favor of passive activities like watching television because their daytime schedule is too hectic to allow for any leisure or relaxation (Suni & Dimitriu, 2023). To protect against these impediments to sleep, the CDC recommends that adults try to adopt and maintain a consistent sleep schedule, create a comfortable sleeping environment free from distractions such as electronic devices, avoid large meals and stimulants before bedtime, and get regular physical exercise (CDC, 2024c).

Psychological Trauma and Resilience

While most midlife adults are coping with regular stressors, it may surprise you to learn that 70 percent report having experienced a traumatic event in their lifetime. The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR)* defines a traumatic event as "exposure to actual or threatened death, serious injury, or sexual violence" (American Psychiatric Association, 2022).

The type of trauma and likelihood of occurrence vary by identity and environment. Women and girls are more likely to have experienced domestic and sexual violence, childhood abuse, life as a refugee, and the death of a child. Men are more apt to have survived or witnessed physical assault, disasters, and warfare (Benjet et al., 2016; Tolin & Foa, 2006). Worldwide data find that adults who are married and educated are less likely to be exposed to trauma (Benjet et al., 2016; Roberts et al., 2011).

Trauma responses vary in symptoms and severity, but they can include difficulty regulating emotions, attentional deficits, guilt, interpersonal difficulties, and even changes to areas of the brain that process emotion and memory, including the amygdala and hippocampus (Kunimatsu et al., 2020; Leite et al., 2022). Psychological and behavioral symptoms of trauma can affect not only the survivor but also others in their environment. Consequences of trauma can be both immediate and, if untreated, long term and intergenerational. Children of trauma survivors may be affected by the unhealthy behaviors or worldview of their caregivers, such as substance abuse or depression, and in some cases, those unhealthy behaviors and perspectives may be learned and repeated by the children themselves (Kuczyńska & Widera-Wysoczańska, 2010). Trauma can increase the risk of mental illnesses, including addiction, personality disorders, eating disorders, anxiety disorders, and mood disorders. Despite the high rates of experienced trauma, only 5 percent of U.S. adults are diagnosed with post-traumatic stress disorder. However, many adults do not seek treatment or receive a diagnosis, especially those from marginalized groups (Association for Behavioral and Cognitive Therapies, 2023).

Many adults find ways to adapt and overcome traumatic life experiences. A person's **resilience** is their ability to successfully adapt to difficult life experiences by making mental, emotional, and behavioral adjustments to cope (American Psychological Association, 2018). What factors promote resilience and recovery after trauma? Much like the research on stress management, trauma research suggests that a person's ability to return to healthy functioning relies on developing an adaptive mindset and receiving prompt social support, with each of these variables potentially affecting the other (Lin et al., 2022). Cultural and spiritual values provide a lens through which adults interpret and respond to trauma (Kalmanowitz & Ho, 2017). For many adults, their religious or ethnic identity can provide a framework for sustaining hope, finding a sense of belonging and meaning, and seeking out social support, all of which increase resilience among those reporting high

affiliation with each of those identity aspects (Raghavan & Sandanapitchai, 2019; Veronese et al., 2017; Wexler, 2014). You can read more about the connection between well-being, hopefulness, and social support in Chapter 14 Social and Emotional Development in Middle Adulthood (Ages 30 to 59).

LINK TO LEARNING

The experiences of traumatic childhood events, such abuse, neglect, and domestic violence, are associated with an increased risk of adult health problems throughout the lifespan, including into the middle adulthood stage, when individuals are more likely to develop health risks and consequences such as cardiovascular disease, cancer, and depression. Watch this TED Talk by pediatrician Nadine Burke about the effects of childhood trauma (https://openstax.org/r/104ChildTrauma) to learn how exposure to adverse childhood events can be the catalyst of allostatic load across the lifetime when not addressed early.

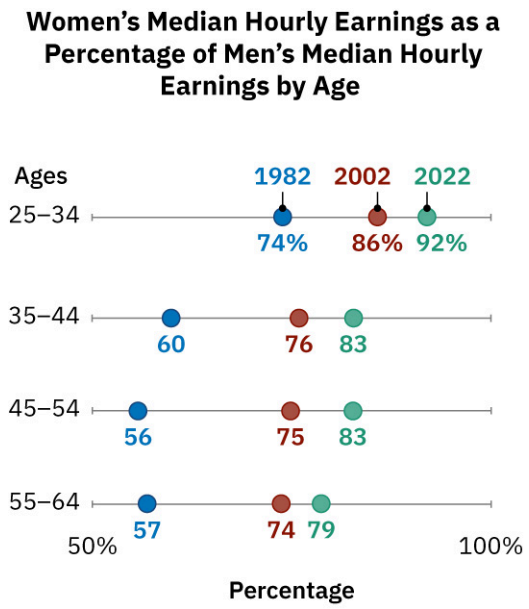
Work-Life Balance

The average person will spend 90,000 hours working over their lifetime (Gettysburg College, n.d.). Work typically provides a source of income as well as a sense of purpose and identity, but employment is only one part of what individuals do. The concept of work-life balance describes the way people manage the demands of work, home life, and other interests, activities, and responsibilities. Lack of work-life balance can create burnout, which is associated with irritability, difficulty concentrating, fatigue, and increased risk of cardiovascular and mental illness (Arenofsky, 2017).

Successfully allocating limited resources of time, energy, and money is challenging, especially when inequalities related to gender and discrimination further complicate both work and family life. Parents in this stage of life may move out of the workforce and back to accommodate young children's needs, and middle-aged adults may also need to fit the care of aging parents and family members in their schedules. During the pandemic, many employees of all ages had the opportunity, if not the mandate, to work from home for the first time. And amid all this change, for midlife workers, retirement drew nearer. All of these considerations are important in learning about the benefits and challenges of achieving a satisfying work-life balance in middle adulthood.

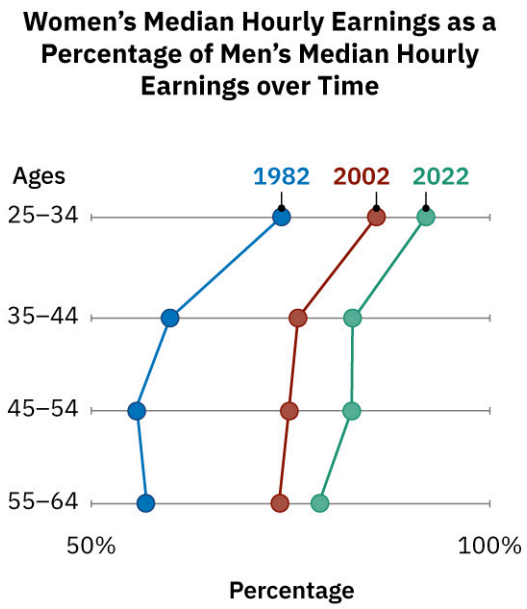
Wage Gaps and Paid Leave Policies

A persistent feature of work in the United States is the pay difference between men and women employees (Figure 13.20). Across full- and part-time workers, women earn only 82 percent of what similarly qualified men make, with the pay gap widening for those with higher education (Gould et al., 2016; Kochhar, 2023). In past decades, the divide has narrowed slightly, and pay equity is nearest for young adult women as they close gaps in educational attainment, experience, and occupational differences.



Source: Kochhar, R. (2023). *The enduring grip of the gender pay gap*. Pew Research Center.

(a)



Source: Kochhar, R. (2023). *The enduring grip of the gender pay gap*. Pew Research Center.

(b)

FIGURE 13.20 (a) Among young adults, the pay gap between women and men has narrowed to 92 percent; however, in middle adulthood, the gap widens to 83 percent. (b) While the gender pay gap has narrowed since the early 1980s, progress has stalled in the last twenty years (Kochhar, 2023). (data source: Pew Research Center; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

However, the gender pay gap increases with age, particularly when women reach the point at which many adults are balancing work responsibilities and childcare. Working women with children are more likely to work two fewer hours per week than their same-aged counterparts without children. On the other hand, working fathers work one additional hour per week, compared to men of the same age without children (Kochhar, 2023). These gender differences in the allocation of parenthood and working hours are called the "motherhood wage penalty" and the "fatherhood wage premium" (Glauber, 2018).

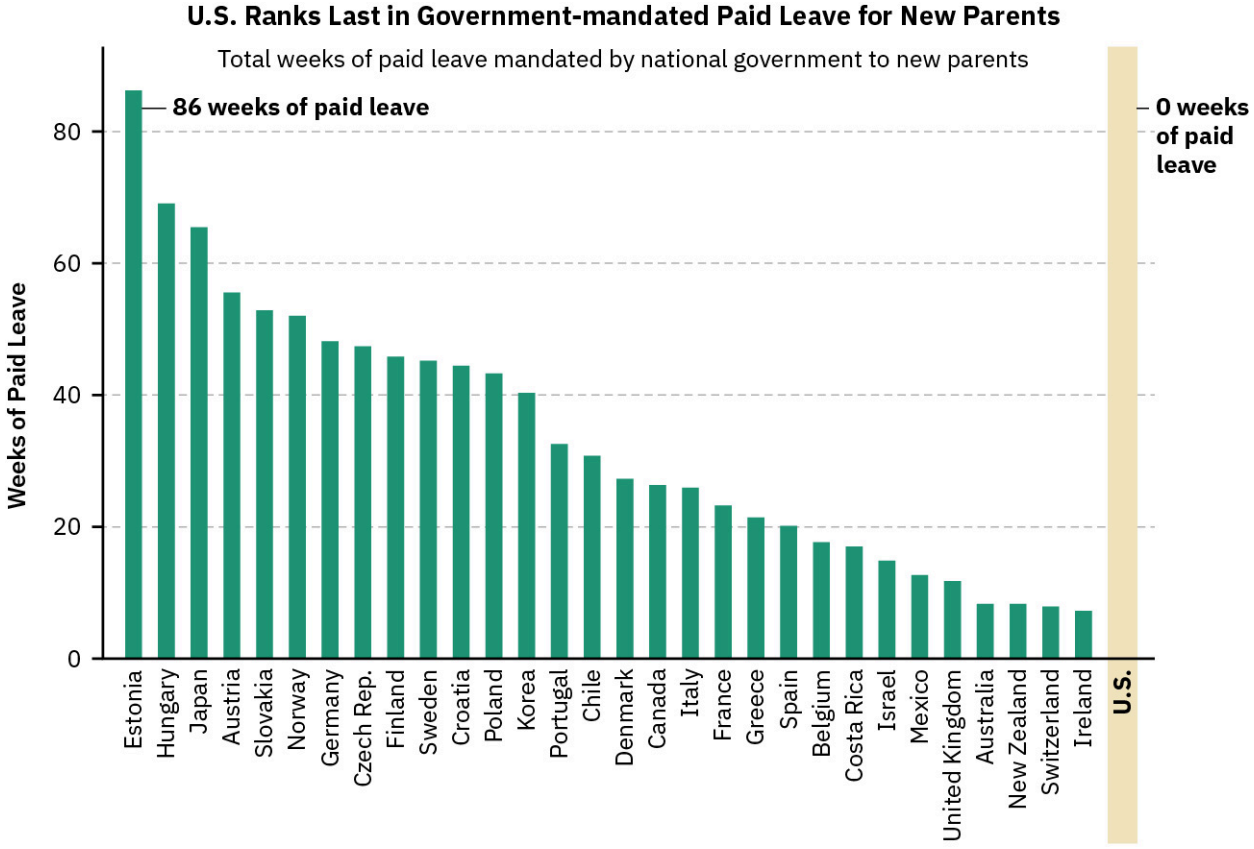
However, the pay gap in middle adulthood is not entirely attributable to the effect of balancing work and caregiving responsibilities. Pay disparities tend to inflate over time, because raises are often calculated as percentages of starting pay. The gender pay gap for entry-level positions is 18.4 percent (Haan & Reilly, 2024). Under those conditions, if a man begins working at a $50,000 salary, a similarly educated woman would, on average, be offered $40,800 to begin work at that same time. If one year later, each are given a 2 percent raise, the man's raise would be $1,000, and the woman's raise would be $408. One year later, their gender pay gap has already increased to 19 percent.

Paid leave work policies allow working adults to take time away to attend to their own health or their family members' health or caregiving needs. This benefit could include medical leave to address a serious health condition, parental leave to care for a new child, caregiving leave to take care of a sick loved one, deployment-related leave to adjust to a family member's military deployment, or safe leave to find safe refuge from sexual or domestic violence.

U.S. federal law does not guarantee paid leave under any of these circumstances, so access to paid leave is subject to the policies of the employer, and those with lower-income jobs and service-sector jobs are less likely to be afforded this benefit. Eleven U.S. states and territories have passed paid family and medical leave laws: California, Colorado, Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Oregon, Rhode Island, Washington state, and Washington, DC. These laws ensure cash benefits and sometimes job protection,

health insurance, and protection from discrimination or retaliation because of medical, caregiving, or parental leave. However, the definition of "family" varies and does not necessarily include members of a person's chosen family (Weston-Williamson, 2023).

Compared to other nations, the United States is alone in its limited access to paid leave. Data gathered on forty-one nations by the Organization for Economic Cooperation and Development found that the United States was the only country that did not federally protect paid parental leave, with most nations guaranteeing twenty weeks or more to parents with a new child (Figure 13.21). Topping the list was Estonia with eighty-six weeks of paid parental leave (Livingston & Thomas, 2019).



Note: Includes maternity leave, paternity leave and parental leave entitlements in place as of April 2018. Estimates based on a "full-rate equivalent," calculated as total number of weeks of any paid leave available to a new parent, multiplied by average rate of earnings reimbursement for those weeks of leave.

Source: Livingston, G., & Thomas, D. (2019). Among 41 countries, only U.S. lacks paid parental leave. Pew Research Center. OECD Family Database.

FIGURE 13.21 With no federal laws mandating paid leave, the United States stands alone among its peer nations. Source: Livingston & Thomas (2019). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

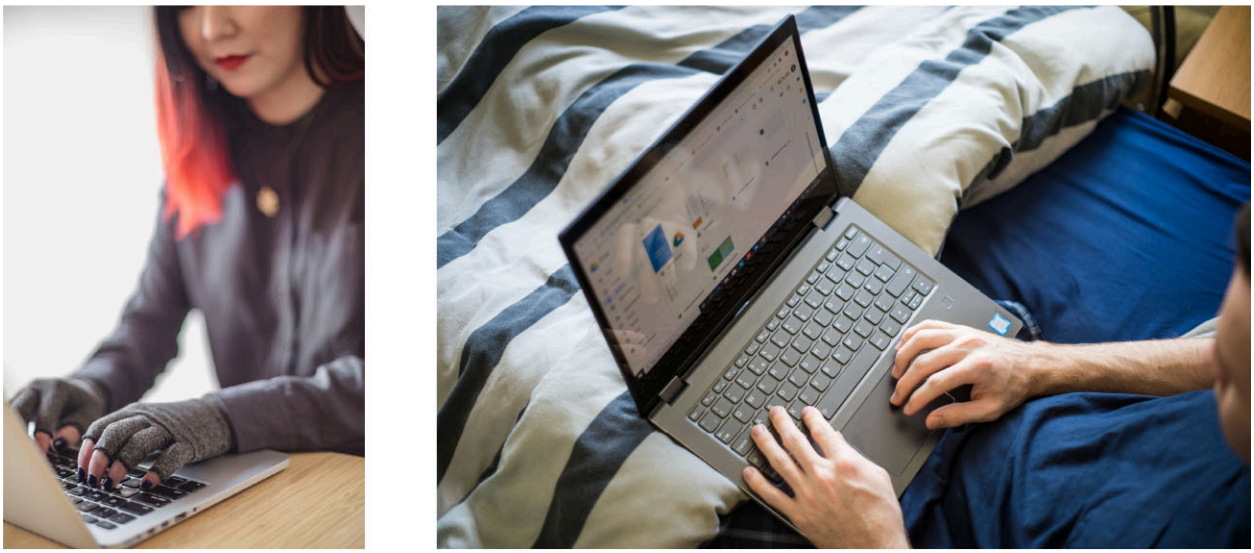
Workplaces and Schedules

Work-life balance and an individual's sense of job satisfaction are impacted by many factors, including workplace location, commuting, and job schedules. With home internet access increasing (particularly in the wake of the COVID-19 pandemic), remote work has increasingly become an option in some careers. White-collar and technical jobs are more likely to be able to offer and support work-from-home positions, and U.S. workers with advanced degrees are more likely to work from home full or part time (Haan & Main, 2023). Women, older adults, and those with lower education or income are less likely to be afforded work-from-home

or flexible schedule options (Dua et al., 2022).

Almost 13 percent of full-time employees work from home, and another 28 percent follow a hybrid model that combines in-office and work-from-home time. These arrangements have yielded a mix of results and individual preferences. Working from home can reduce the time, stress, and cost of commuting, and workers with jobs that require greater amounts of individual concentration seem to benefit from the opportunity to reduce workplace interruptions by working outside the office (Golden & Gajendran, 2019). Employees also say that working from home allows for greater flexibility in how they spend their time and even flexibility in where they choose to live (Buffer, 2023).

But not all workers have this experience. While employee surveys have also found that remote work corresponds with reduced stress for some (42 percent), there are also drawbacks. Some employees find that working from home is isolating and reduces collaboration and the chance to build relationships with coworkers. Others report that with the lines blurred between home and office, they end up working longer hours. Also, only one-third of employees working from home have a dedicated office space at home—the rest work from their bedroom, living room, or even move from room to room throughout the day (Figure 13.22). Despite the drawbacks, however, 98 percent of those who currently work remotely would prefer to continue to do so, at least part of the time, for the rest of their career (Allen et al., 2015; Done, 2022).



(a) (b)

FIGURE 13.22 The majority of people working remotely would prefer to continue with that arrangement, despite challenges like (a, b) lacking a dedicated workspace in their home. (credit a: modification of work “arthritistyping” by Tojo Andrianarivo/Disabled and Here, CC BY 4.0; credit b: modification of work “Man working from home in bed” by Microbiz Mag/Flickr, CC BY 2.0)

Some workplaces have experimented with transitioning from a traditional five-day workweek to a four-day week. In 2022, more than sixty companies and almost 3,000 workers in the United Kingdom participated for six months in an experiment with the four-day work week (Lewis et al., 2023). Findings from the study showed that the shortened schedule resulted in lower rates of employee stress and burnout, and more than half of employees reported improvements in options around work-life balance. Of the participating businesses, 92 percent planned to continue the four-days-a-week model. This model not only can provide more flexibility in the work week but also cuts down on commuting time.

The average commute to work in the United States is nearly thirty minutes each way, with most leaving between 6 and 8:30 a.m., which makes it particularly difficult to get school-aged kids off to school. The longest commutes are for those using public transportation (U.S. Census Bureau, 2021). Adjusting to a four-days-a-week model saves one hour of time (that could be allocated to work, caregiving, or leisure), reduces rush-hour

congestion on public transportation and roads, saves fuel costs, and thereby may allow more opportunity to balance responsibilities at work and home.

Job Satisfaction

Job satisfaction generally increases with age and is predicted by factors such as perceived support at work, level of job engagement, and opportunities for planning and control over work tasks, but satisfaction is not increased by time spent working in a single organization (Indryawati et al., 2022; Safitri et al., 2020). Rather, across a wide variety of occupations, increased job satisfaction over the lifespan is better accounted for by increases in pay or position that result from moving from one workplace to another, rather than remaining in a single organization (Riza et al. 2016). In fact, job satisfaction is negatively correlated to the amount of time spent working for the same organization. Inflexible job hours, job insecurity, perceived lack of control over daily work, poor relationships with coworkers, discrimination in the workplace, and work stress all predict increased feelings of work dissatisfaction (Stats, 2019). Chronic dissatisfaction can lead to **burnout**, a state in which long-term job-related stress leads to disillusionment and lack of energy.

Perhaps for reasons like these, there has been a substantial rise in the number of workers who are self-employed, particularly among women, Black and Hispanic adults, and those with young children. Self-employment can offer greater autonomy in the organization of work and is most common in the fields of transportation, communication, personal services (which can include anything from accounting to health care), and recreational services (such as entertainment) (Cai & Baker, 2023).[6]

The careers of many adults reach their peak in midlife, when they often produce high-quality, creative work. However, career adjustments and changes in work arrangements have grown more frequent in recent years. Since the start of the COVID-19 pandemic, for example, more than 20 percent of adults over age forty years have changed not just their jobs but their careers (Prudential, 2021). Another 46 percent considered or are considering a change, even if doing so means taking a reduction in pay (Microsoft, 2021). Some individuals change jobs and careers by choice, seeking more fulfilling employment or attempting to change a situation of stagnation or burnout. Those seeking new work because of dissatisfaction may find the contentment of a new job fleeting after the newness wears off and then reengage in the job search cycle (Riza et al., 2016). At other times, job changes are involuntary and result from changes in a company or industry, such as layoffs, mergers, relocations, or even closures. These uncontrollable events tend to be more psychologically taxing on employees (Crowley et al., 2003).

The stress of unexpected unemployment can be minimized by support, encouragement, and understanding from significant others (Vinokur & van Ryn, 1993) (Figure 13.23). Individuals in these circumstances also benefit from the use of problem-focused coping skills (oriented toward problem-solving) and emotion-focused coping skills (oriented toward managing stress and other distressing feelings) (Cook & Heppner, 1997; Tsaur et al., 2015).

6 This study (Cai & Baker, 2023) uses the terms "Black," "White," "Hispanic," and "Other."

FIGURE 13.23 Support and understanding from significant others can help to ameliorate some of the stresses of job losses out of one's control. (credit: modification of work "LGBT Love" by Nehemiah Brent/nappy, Public Domain)

Outside of one's job, engaging in interests and leisure activities is an important element of work-life balance. Adults between the ages of twenty-five and sixty years report having a daily average of five hours of free time, with men reporting approximately thirty more minutes of free time per day than women. More than half of that free time is spent in front of a screen (cell phone, computer, TV) (Sturm & Cohen, 2019).

Due to caregiving and work responsibilities, midlife adults spend very little time in physical leisure activities (daily average of twenty minutes for men and daily average of thirteen minutes for women), though overall available free time and physical leisure activities increase on the weekends (U.S. Bureau of Labor Statistics, 2023; Sturm & Cohen, 2019). Physical activities performed during leisure time, like hiking, walking, biking, running, and dancing, are associated with increased lifespans (Schnohr et al., 2017). Those adults who engaged in high levels of physical activity saw the greatest lifespan benefit of 5.5 years; those engaging in moderate levels benefited by 4.5 years. Even light activity can add 2.8 years to the lifespan. Cognitive abilities are also improved by leisure activities. Researchers have found less cognitive decline when leisure time includes games, puzzles, or physical activities (Andel et al., 2016). Improving work-life balance by engaging in personal leisure activities provides adults with several health benefits, including lowered stress levels (du Prel et al., 2019) and reduced likelihood of burnout (Wolff et al., 2021), outcomes that are important to overall well-being.

References

AlDabal, L., & BaHammam, A. S. (2011). Metabolic, endocrine, and immune consequences of sleep deprivation. *The Open Respiratory Medicine Journal*, *5*, 31. https://doi.org/10.2174/1874306401105010031

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, *16*(2), 40–68. https://doi.org/10.1177/1529100615593273

American Cancer Society. (2023). *Cancer Facts & Figures 2023.* American Cancer Society. https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2023/2023-cancer-facts-and-figures.pdf

American College of Cardiology. (2023, May 1). *Young women more likely to return to the hospital in year following heart attack.* American College of Cardiology. https://www.acc.org/About-ACC/Press-Releases/2023/05/01/18/25/Young-Women-More-Likely-to-Return-to-the-Hospital-in-Year-Following-Heart-Attack

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

American Psychological Association. (2018, April 19). Resilience. In *APA dictionary of psychology*. https://dictionary.apa.org/resilience

Andel, R., Finkel, D., & Pedersen, N. L. (2016). Effects of preretirement work complexity and postretirement leisure activity on cognitive aging, *The Journals of Gerontology: Series B, 71*(5), 849–856. https://doi.org/10.1093/geronb/gbv026

Appleton, J. (2018). The gut-brain axis: Influence of microbiota on mood and mental health. *Integrative Medicine, 17*(4), 28–32.

Arenofsky, J. (2017). *Work–life balance.* Greenwood.

Association for Behavioral and Cognitive Therapies. (2023). https://www.abct.org/

Badr, L. K., Bourdeanu, L., Alatrash, M., & Bekarian, G. (2018). Breast cancer risk factors: A cross-cultural comparison between the West and the East. *Asian Pacific Journal of Cancer Prevention*, *19*(8), 2109–2116. https://doi.org/10.22034/APJCP.2018.19.8.2109

Barnes, C. M., Guarana, C., Lee, J., & Kaur, E. (2023). Using wearable technology (closed loop acoustic stimulation) to improve sleep quality and work outcomes. *Journal of Applied Psychology*, *108*(8), 1391–1407. https://doi.org/10.1037/apl0001077

Basner, M., Fomberstein, K. M., Razavi, F. M., Banks, S., William, J. H., Rosa, R. R., & Dinges, D. F. (2007). American time use survey: Sleep time and its relationship to waking activities. *Sleep, 30*(9), 1085–1095. https://doi.org/10.1093/sleep/30.9.1085

Benjet, C., Bromet, E., Karam, E. G., Kessler, R. C., McLaughlin, K. A., Ruscio, A. M., Shahly, V., Stein, D. J., Petukhova, M., Hill, E., Alonso, J., Atwoli, L., Bunting, B., Bruffaerts, R., Caldas-de-Almeida, J. M., de Girolamo, D., Florescu, S., Gureje, O., Huang, Y., . . .Koenen, K. C. (2016). The epidemiology of traumatic event exposure worldwide: Results from the World Mental Health Survey Consortium. *Psychological medicine*, *46*(2), 327–343. https://doi.org/10.1017/S0033291715001981

Berg, S. (2023, June 14). *Use of BMI alone is an imperfect clinical measure.* American Medical Association. https://www.ama-assn.org/delivering-care/public-health/ama-use-bmi-alone-imperfect-clinical-measure

Bhowmik Bhunia, G., & Ray, U. S. (2024). Improvement in muscular strength, body flexibility and balance by yogasana and with reduced detraining effects by yoga breathing maneuvers: A non-randomized controlled study. *Journal of Ayurveda and Integrative Medicine*, *15*(1), Article 100815. https://doi.org/10.1016/j.jaim.2023.100815

Bloom, H. G., Ahmed, I., Alessi, C. A., Ancoli-Israel, S., Buysse, D. J., Kryger, M. H., Phillips, B. A., Thorpy, M. J., Vitiello, M. V., & Zee, P. C. (2009). Evidence-based recommendations for the assessment and management of sleep disorders in older persons. *Journal of the American Geriatrics Society, 57,* 761–789. https://doi.org/10.1111/j.1532-5415.2009.02220.x

Bosworth, H. B., Siegler, I. C., Olsen, M. K., Brummet, G. H., Barefoot, J. C., Williams, R. B., Clapp-Channing, N. E., & Mark, D. B. (2000). Social support and quality of life in patients with coronary artery disease. *Quality of life research: An International Journal of Quality of Life Aspects of Treatment, Care, and Rehabilitation, 9*(7), 829–839. https://doi.org/10.1023/a:1008960308011

Buffer. (2023). *State of remote work 2023.* https://buffer.com/state-of-remote-work/2023

Cai, J. Y., & Baker, D. (2023, October 11). *The pandemic and self-employment: An update.* Center for Economic and Policy Research. https://cepr.net/the-pandemic-and-self-employment-an-update

Castillo, C. (2016). *Social Support: Gender Differences, Psychological Importance and Impacts on Well-being.* Nova Science Publishers Inc.

Centers for Disease Control and Prevention. (n.d.a). *10 leading causes of death, United States, 2021, both sexes, all ages, all races.* National Center for Injury Prevention and Control. https://wisqars.cdc.gov/pdfs/leading-causes-of-death-by-age-group_2021_508.pdf

Centers for Disease Control and Prevention. (n.d.b). *About underlying cause of death 1999–2020.* U.S. Department of Health and Human Services. https://wonder.cdc.gov/ucd-icd10.html

Centers for Disease Control and Prevention. (2022, September 22). *Prediabetes risk test.* U.S. Department of Health and Human Services. https://www.cdc.gov/prediabetes/risktest/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fdiabetes%2Frisktest%2Findex.html

Centers for Disease Control and Prevention. (2023a, May 4). *Burden of cigarette use in the U.S.* U.S. Department of Health and Human Services.https://www.cdc.gov/tobacco/campaign/tips/resources/data/cigarette-smoking-in-united-states.html

Centers for Disease Control and Prevention. (2023b, September 12). *Tips for quitting.* U.S. Department of Health and Human Services. https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/tips-for-quitting/index.html#

Centers for Disease Control and Prevention. (2024a, May 8). *Preventing opioid overdose.* U.S. Department of Health and Human Services. https://www.cdc.gov/overdose-prevention/prevention/index.html

Centers for Disease Control and Prevention. (2024b, May 14). *Adult obesity facts.* U.S. Department of Health and Human Services. https://www.cdc.gov/obesity/php/data-research/adult-obesity-facts.html?CDC_AAref_Val=https://www.cdc.gov/obesity/data/adult.html

Centers for Disease Control and Prevention. (2024c, May 14). *Tips for better sleep.* U.S. Department of Health and Human Services. https://www.cdc.gov/sleep/about/?CDC_AAref_Val=https://www.cdc.gov/sleep/about_sleep/sleep_hygiene.html

Centers for Disease Control and Prevention. (2024d, May 14). *Prediabetes—Your chance to prevent Type 2 diabetes. U.S. Department of Health and Human Services.* https://www.cdc.gov/diabetes/prevention-type-2/prediabetes-prevent-type-2.html?CDC_AAref_Val=https://www.cdc.gov/diabetes/basics/prediabetes.html

Centers for Disease Control and Prevention. (2024e, May 15). *National diabetes statistics report.* U.S. Department of Health and Human Services. https://www.cdc.gov/diabetes/php/data-research/index.html

Charles, S. T., Mogle, J., Chai, H. W., & Almeida, D. M. (2021). The mixed benefits of a stressor-free life. *Emotion*, *21*(5), 962–971. https://doi.org/10.1037/emo0000958

Cherry, K. E., Walker, E. J., Brown, J. S., Volaufova, J., LaMotte, L. R., Welsh, D. A., Su, L. J., Jazwinski, S. M., Ellis, R., Wood, R. H., & Frisard, M. I. (2013). Social engagement and health in younger, older, and oldest-old adults in the Louisiana Healthy Aging Study. *Journal of Applied Gerontology, 32*(1), 51–75. https://doi.org/10.1177/0733464811409034

Cook, S. W., & Heppner, P. P. (1997). A psychometric study of three coping measures. *Educational and Psychological Measurement*, *57*(6), 906–923. https://doi.org/10.1177/0013164497057006002

Crowley, B. J., Hayslip, B. J., & Hobdy, J. (2003). Psychological hardiness and adjustment to life events in adulthood. *Journal of Adult Development, 10*, 237–248. https://doi.org/10.1023/A:1026007510134

Crum, A. J., Akinola, M., Martin, A., & Fath, S. (2017). The role of stress mindset in shaping cognitive, emotional, and physiological responses to challenging and threatening stress. *Anxiety, Stress, & Coping, 30*(4), 379–395. https://doi.org/10.1080/10615806.2016.1275585

Crum, A. J., Santoro, E., Handley-Miner, I., Smith, E. N., Evans, K., Moraveji, N., Achor, S., & Salovey, P. (2023). Evaluation of the "rethink stress" mindset intervention: A metacognitive approach to changing mindsets. *Journal of Experimental Psychology: General*, *152*(9), 2603–2622. https://doi.org/10.1037/xge0001396

Curfman, G. (2019, July 29). *A promising new treatment for high triglycerides.* Harvard Health Publishing. https://www.health.harvard.edu/blog/a-promising-new-treatment-for-high-triglycerides-201507298160

D'Amico, D., Amestoy, M. E., & Fiocco, A. J. (2020). The association between allostatic load and cognitive function: A systematic and meta-analytic review. *Psychoneuroendocrinology, 121*, Article 104849. https://doi.org/10.1016/j.psyneuen.2020.104849

Dasgupta, A. (2018). *The science of stress management: A guide to best practices for better well-being.* Rowman & Littlefield Publishers.

Denollet, J. (1997). Personality, emotional distress and coronary heart disease. *European Journal of Personality, 11*(5), 343–357. https://doi.org/10.1002/(SICI)1099-0984(199712)11:5<343::AID-PER305>3.0.CO;2-P

Denton, M., Prus, S., & Walters, V. (2004). Gender differences in health: A Canadian study of the psychosocial, structural and behavioural determinants of health. *Social Science & Medicine*, *58*(12), 2585–2600. https://doi.org/10.1016/j.socscimed.2003.09.008

Done, P. (2022, August 31). *Don't forget the downsides of remote work.* Forbes. https://www.forbes.com/sites/forbesbusinesscouncil/2022/08/31/dont-forget-the-downsides-of-remote-work

du Prel, J. B., Siegrist, J., & Borchart, D. (2019). The role of leisure-time physical activity in the change of work-related stress (ERI) over time. *International Journal of Environmental Research and Public Health*, *16*(23), 4839. https://doi.org/10.3390/ijerph16234839

Dua, A., Ellingrud, K., Kirschner, P., Kwok, A., Luby, R., Palter, R., & Pemberton, S. (2022, June 23). *Americans are embracing flexible work—and they want more of it.* McKinsey & Company. https://www.mckinsey.com/industries/real-estate/our-insights/americans-are-embracing-flexible-work-and-they-want-more-of-it

Dydyck, A. M., Jain, N. K., & Gupta, M. (2024). Opioid use disorder. In *Stat Pearls.* StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK553166/

Friedman, M., & Rosenman, R. H. (1959). Association of specific overt behavior pattern with blood and cardiovascular findings; blood cholesterol level, blood clotting time, incidence of arcus senilis, and clinical coronary artery disease. *Journal of the American Medical Association*, *169*(12), 1286–1296. https://doi.org/10.1001/jama.1959.03000290012005

Forde, A. T., Crookes, D. M., Suglia, S. F., & Demmer, R. T. (2019). The weathering hypothesis as an explanation for racial disparities in health: A systematic review. *Annals of Epidemiology, 33*, 1–18. Article e3. https://doi.org/10.1016/j.annepidem.2019.02.011

Fultz, N. E., Bonmassar, G., Setsompop, K., Stickgold, R. A., Rosen, B. R., Polimeni, J. R., & Lewis, L. D. (2019). Coupled electrophysiological, hemodynamic, and cerebrospinal fluid oscillations in human sleep. *Science, 366*(6465), 628–631. https://doi.org/10.1126/science.aax5440

Geronimus, A. T. (1992). The weathering hypothesis and the health of African American women and infants: Evidence and speculations. *Ethnicity & Disease*, *2*(3), 207–221. http://www.jstor.org/stable/45403051

Geronimus, A.T., Hicken, M., Keene, D., & Bound, J. (2006). "Weathering" and age patterns of allostatic load scores among blacks and whites in the United States. *American Journal of Public Health, 96*(5), 826–833. https://doi.org/10.2105/AJPH.2004.060749

Gettysburg College. (n.d.). *One-third of your life is spent at work.* https://www.gettysburg.edu/news/stories?id=79db7b34-630c-4f49-ad32-4ab9ea48e72b#:~:text=How%20much%20of%20your%20life,at%20work%20over%20a%20lifetime

Glauber, R. (2018). Trends in the motherhood wage penalty and fatherhood wage premium for low, middle, and high earners. *Demography*, *55*(5), 1663–1680. http://www.jstor.org/stable/45048028

Golden, T. D., & Gajendran, R. S. (2019). Unpacking the role of a telecommuter's job in their performance: Examining job complexity, problem solving, interdependence, and social support. *Journal of Business Psychology, 34*, 55–69. https://doi.org/10.1007/s10869-018-9530-4

Gould, E., Schieder, J., & Geier, K. (2016, October 20). *What is the gender pay gap and is it real?* Economic Policy Institute. https://www.epi.org/publication/what-is-the-gender-pay-gap-and-is-it-real/

Guidi, J., Lucente, M., Sonino, N., & Fava, G. A. (2020). Allostatic load and its impact on health: A systematic review. *Psychotherapy and Psychosomatics*, *90*(1), 11–27. https://doi.org/10.1159/000510696

Haan, K., & Main, K. (2023, June 12). *Remote work statistics and trends in 2023.* Forbes Advisor. https://www.forbes.com/advisor/business/remote-work-statistics

Haan, K., & Reilly, K. (2024, March 1). *Gender pay gap statistics in 2024.* Forbes Advisor. https://www.forbes.com/advisor/business/gender-pay-gap-statistics

Hamlin, A. M., Kraal, A. Z., Sol, K., Morris, Martino, A. G., Zaheed, A. B., & Zahodne, L. B. (2022). Social engagement and its links to cognition differ across non-Hispanic Black and White older adults. *Neuropsychology*, *36*(7), 640–650. https://doi.org/10.1037/neu0000844.supp

Harris, N. B. (2014, September). *How childhood trauma affects health across a lifetime* [Video]. TED Conferences. https://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime/transcript?subtitle=en

Hill, P. L., Olaru, G., & Allemand, M. (2023). Do associations between sense of purpose, social support, and loneliness differ across the adult lifespan? *Psychology and Aging, 38*(4), 345–355. https://doi.org/10.1037/pag0000733

Hirshkowitz, M., Whiton, K., Albert, S. M., Alessi, C., Bruni, O., DonCarlos, L., Hazen, N., Herman, J., Hillard, P. J. A., Katz, E. S., Kheirandish-Gozal, L., Neubauer, D. N., O'Donnell, A. E., Ohayon, M., Peever, J., Rawding, R., Sachdeva, R. C., Setters, B., Vitiello, M. V., & Ware, J. C. (2015). National Sleep Foundation's updated sleep duration recommendations: Final report. *Sleep health, 1*(4), 233–243. https://doi.org/10.1016/j.sleh.2015.10.004

Hirst, M. (2023). *Not as cold as you might think: Syracuse, NY, a food desert.* Unpacking Your Lunch. https://unpackingyourlunch.wixsite.com/unpacking-your-lunch/post/not-as-cold-as-you-might-think-syracuse-ny-a-food-desert

Indryawati, R., Hadis, F. A., & Rahardjo, W. (2022). Contribution of perceived social support and job enrichment to job satisfaction in PAUD (early childhood education programs) teachers. *International Journal of Public Relations*, *101*(1), 6–6. https://doi.org/10.47119/IJRP1001011520223215

Insurance Institute for Highway Safety. (2024, June). *Fatality facts 2022*. Highway Loss Data Institute. https://www.iihs.org/topics/fatality-statistics/detail/yearly-snapshot
James, B. D., Wilson, R. S., Barnes, L. L., & Bennett, D. A. (2011, April 8). Late-life social activity and cognitive decline in old age. *Journal of the International Neuropsychological Society, 17*(6), 998–1005. https://doi.org/10.1017/S1355617711000531
Johnson, R. & Stewart, N. (2021, June 1). *Defining low-income, low-access food areas (food deserts)*. Congressional Research Service. https://crsreports.congress.gov/product/pdf/IF/IF11841
Kalmanowitz, D., and Ho, R. T. (2017). Out of our mind. Art therapy and mindfulness with refugees, political violence and trauma. *The Arts in Psychotherapy, 49*, 57–65. https://doi.org/10.1016/j.aip.2016.05.012
Katella, K. (2023, February 10). *How is heart disease different in women?* Yale Medicine. https://www.yalemedicine.org/news/heart-disease-women
Kaur, S., Banerjee, N., Miranda, M., Slugh, M., Sun-Suslow- N., McInerney, K. F., Sun, X., Ramos, A. R., Rundek, T., Sacco, R. L., & Levin, B. E. (2019). Sleep quality mediates the relationship between frailty and cognitive dysfunction in non-demented middle aged to older adults. *International Psychogeriatrics*, *31*(6), 779–788. https://doi.org/10.1017/s1041610219000292
Khan, F., & Aftab, S. (2013). Marital satisfaction and perceived social support as vulnerability factors to depression. *American International Journal of Social Science*, *2*(5), 99–107.
Klinzing, J., Niethard, N., & Born, J. (2019). Mechanisms of systems memory consolidation during sleep. *Nature Neuroscience, 22,* 1598–1610. https://www.nature.com/articles/s41593-019-0467-3
Kobayashi, D., Takahashi, O., Shimbo, T., Okuba, T., Arioka, H., & Fukui, T. (2013). High sleep duration variability is an independent risk factor for weight gain. *Sleep & Breathing, 17*(1), 167–172. https://doi.org/10.1007/s11325-012-0665-7
Kochhar, R. (2023, March 1). *The enduring grip of the gender pay gap*. Pew Research Center. https://www.pewresearch.org/social-trends/2023/03/01/the-enduring-grip-of-the-gender-pay-gap/
Kuczyńska, A. E., & Widera-Wysoczańska, A. E. (2010). *Interpersonal Trauma and its Consequences in Adulthood*. Cambridge Scholars Publishing.
Kunimatsu, A., Yasaka, K., Akai, H., Kunimatsu, N., & Abe, O. (2020). MRI findings in posttraumatic stress disorder. *Journal of Magnetic Resonance Imaging, 52*(2), 380–396. https://doi.org/10.1002/jmri.26929
Leite, L., Esper, N. B., Junior, J. R. M. L., Lara, D. R., & Bushweitz, A. (2022). An exploratory study of resting-state functional connectivity of amygdala subregions in posttraumatic stress disorder following trauma in adulthood. *Scientific Reports, 12*(1), 1–12. https://doi.org/10.1038/s41598-022-13395-8
Lenart-Bugla, M., Szcześniak, D., Bugla, B., Kowalski, K., Niwa, S., Rymaszewska, J., & Misiak, B. (2022). The association between allostatic load and brain: A systematic review. *Psychoneuroendocrinology,* Article 105917. https://doi.org/10.1016/j.psyneuen.2022.105917
Lewis, K., Strange, W., Kellam, J., Kikuchi, L., Schor, J., Fan, W., Kelly, O., Gu, G., Frayne, D., Burchell, B., Hubbard, N. B., White, J., Kamarāde, D., & Mullens, F. (2023, February). *The results are in: The UK's four-day week pilot*. Autonomy. https://static1.squarespace.com/static/60b956cbe7bf6f2efd86b04e/t/63f3df56276b3e6d7870207e/1676926845047/UK-4-Day-Week-Pilot-Results-Report-2023.pdf
Lin, T., Yi, Z., Zhang, S., & Veldhuis, C. B. (2022). Predictors of psychological distress and resilience in the post-COVID-19 era. *International Journal of Behavioral Medicine, 29*(4), 506–516. https://doi.org/10.1007/s12529-021-10036-8
Livingston, G., & Thomas, D. (2019, December 16). *Among 41 countries, only US lacks paid parental leave*. Pew Research Center. https://www.pewresearch.org/short-reads/2019/12/16/u-s-lacks-mandated-paid-parental-leave/
Lucassen, E. A., De Mutsert, R., le Cessie, S., Appelman-Dijkstra, M., Rosendaal, F. R., van Heemst, D., den Heijer, M., & Biermasz, N. R. (2017). Poor sleep quality and later sleep timing are risk factors for osteopenia and sarcopenia in middle-aged men and women: The NEO study. *PloS one*, *12*(5), Article e0176685. https://doi.org/10.1371/journal.pone.0176685
McEwen, B. S., & Seeman, T. (1999). Protective and damaging effects of mediators of stress: Elaborating and testing the concepts of allostasis and allostatic load. *Annals of the New York Academy of Sciences*, *896*(1), 30–47. https://doi.org/10.1111/j.1749-6632.1999.tb08103.x
Microsoft. (2021, March 22). *The next great disruption is hybrid work. Are we ready?* https://www.microsoft.com/en-us/worklab/work-trend-index/hybrid-work
Moreno-Murcia, J. A., Belando, N., & Huéscar, E., Torres, M.D. (2017). Social support, physical exercise and life satisfaction in women, *Revista Latinoamericana de Psicología, 49*(3), 194–202, https://doi.org/10.1016/j.rlp.2016.08.002
Morris, M. C., Tangney, C. C., Wang, Y., Sacks, F., M., Barnes, L. L., Bennett, D. A., & Aggarwal, N. T. (2015). MIND diet slows cognitive decline with aging. *Alzheimer's & Dementia*, *11*(9), 1015–1022. https://doi.org/10.1016/j.jalz.2015.04.011
National Cancer Institute. (2020). *Provocative questions initiative*. U.S. Department of Health and Human Services. https://provocativequestions.cancer.gov/about-pqs/history
National Cancer Institute. (2021, March 5). *Age and cancer risk*. U.S. Department of Health and Human Services. https://www.cancer.gov/about-cancer/causes-prevention/risk/age
National Cancer Institute. (2023, October 23). *Cancer prevention overview (PDQ)—Patient overview.* U.S. Department of Health and Human Services. https://www.cancer.gov/about-cancer/causes-prevention/patient-prevention-overview-pdq
National Heart Lung & Blood Institute. (2013). *How to use the nutrition facts label*. U.S. Department of Health and Human Services. https://www.nhlbi.nih.gov/health/educational/wecan/downloads/nutritionlabel.pdf
Ngandu, T., Lehtisalo, J., Solomon, A., Levälahti, E., Ahtiluoto, A., Antikainen, R., Bäckman, L., Hänninen, T., Jula, A., Laatikainen, T., Lindström, J., Mangialasche, F., Paajanen, T., Pajala, S., Peltonen, M., Rauramaa, R., Stigsdotter-Neely, A., Strandberg, T., Tuomilehto, J., . . .Kivipelto, M. (2015). A 2-year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): A randomised controlled trial. *The Lancet*, *385*(9984), 2255–2263. https://doi.org/10.1016/s0140-6736(15)60461-5
O'Dell, K. R., Masters, K. S., Spielmans, G. I., & Maisto, S. A. (2011). Does type-D personality predict outcomes among patients with cardiovascular disease? A meta-analytic review. *Journal of psychosomatic research, 71*(4), 199–206. https://doi.org/10.1016/j.jpsychores.2011.01.009
Okun, M. A., & Keith, V. M. (1998). Effects of positive and negative social exchanges with various sources on depressive symptoms in younger and older adults. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *53*(1), P4–P20. https://doi.org/10.1093/geronb/53b.1.p4
Pant, A., Gribbin, S., McIntyre, D., Trivedi, R., Marschner, S., Laranjom L., Mamas, M. A., Flood, V., Chow, C. K., & Zaman, S. (2023). Primary prevention of cardiovascular disease in women with a Mediterranean diet: Systematic review and meta-analysis. *Heart, 109*, 1208–1215. https://doi.org/10.1136/heartjnl-2022-321930
Parker, H. W., Abreu, A. M., Sullivan, M. C., & Vadiveloo, M. K. (2022). Allostatic load and mortality: a systematic review and meta-analysis. *American Journal of Preventive Medicine, 63*(1), 131–140. https://doi.org/10.1016/j.amepre.2022.02.003
Patel, S. R., Malhotra, A., White, D. P., Gottlieb, D. J., & Hu, F. B. (2006). Association between reduced sleep and weight gain in women. *American Journal of Epidemiology, 164,* 947–954. https://doi.org/10.1093/aje/kwj280
Perlman, G., Cogo-Moreira, H., Wu, C. Y., Herrmann, N., & Swardfager, W. (2022). Depression interacts with allostatic load to predict cognitive decline in middle age. *Psychoneuroendocrinology, 146*, 105922. https://doi.org/10.1016/j.psyneuen.2022.105922
Prudential. (2021, April 5). *Pulse of the American worker survey: Is this working?* https://news.prudential.com/latest-news/prudential-news/prudential-news-details/2021/Pulse-of-the-American-Worker-Survey-Is-This-Working/default.aspx
Raghavan S. S., & Sandanapitchai, P. (2019). Cultural predictors of resilience in a multinational sample of trauma survivors. *Frontiers in Psychology, 10*, Article 131. https://doi.org/10.3389/fpsyg.2019.00131
Riza, D. S., Ganzach, Y., & Liu, Y. (2016). Time and job satisfaction: A longitudinal study of the differential roles of age and tenure. *Journal of Management, 44*(7). https://doi.org/10.1177/0149206315624962
Roberts, A. L., Gilman, S. E., Breslau, J., Breslau, N., Koenen, K. C. (2011). Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States. *Psychological Medicine, 41*(1), 71–83. https://doi.org/10.1017/S0033291710000401
Rose, D., Bodor, N., Swalm, C., Rice, J. C., Farley, T. A., & Hutchinson, P. L. (2009). Deserts in New Orleans? Illustrations of urban food access and implications for policy. National Poverty Center Working Paper. https://www.researchgate.net/publication/237579148_1_Deserts_in_New_Orleans_Illustrations_of_Urban_Food_Access_and_Implications_for_Policy
Ross, A. & Thomas, S. (2010). The health benefits of yoga and exercise: A review of comparison studies. *Journal of Alternative and Complementary Medicine,* 16(1), 3–12. https://doi.org/10.1089/acm.2009.0044
Rymarczyk, K., Turbacz, A., Strus, W., & Cieciuch, J. (2020). Type C personality: Conceptual refinement and preliminary operationalization. *Frontiers in Psychology, 11*, 10. https://doi.org/10.3389/fpsyg.2020.552740
Safitri, M., Mariyanti, S., & Budiawan, A. (2020). Relationship between work satisfaction and work engagement: A study of marketing department in Pt Bank Swasta C (Jakarta). *International Journal of Psychosocial Rehabilitation, 24*(1).
Schnohr, P., O'Keefe, J. H., Lange, P., Jensen, G. B., & Marott, J. L. (2017). Impact of persistence and non-persistence in leisure time physical activity on coronary heart disease and all-cause mortality: The Copenhagen City Heart Study. *European Journal of Preventive Cardiology, 24*(15), 1615–1623. https://doi.org/10.1177/2047487317721021
Seawell, A. H., Cutrona, C. E., & Russell, D. W. (2014). The effects of general social support and social support for racial discrimination on African American women's well-being. *Journal of Black Psychology, 40*(1), 3–26. https://doi.org/10.1177/0095798412469227
Seeman, T. E., Singer, B. H., Rowe, J. W., Horwitz, R. I., & McEwan, B. S. (1997). Price of adaptation—allostatic load and its health consequences. MacArthur studies of successful aging. *Archives of Internal Medicine*, *157*(19), 2259–2268. https://doi.org/10.1001/archinte.1997.00440400111013

Sharma, A., Madaan, V., & Petty, F. D. (2006). Exercise for mental health. *Primary Care Companion to the Journal of Clinical Psychiatry*, *8*(2), 106. https://doi.org/10.4088/pcc.v08n0208a
Singh, B., Olds, T., Curtis, R., Dumuid, D., Virgara, R., Watson, A., Szeto, K., O'Connor, E., Ferguson, T., Eglitis, E., Miatke, A., Simpson, C. E. M., & Maher, C. (2023). Effectiveness of physical activity interventions for improving depression, anxiety and distress: An overview of systematic reviews. *British Journal of Sports Medicine*. https://doi.org/10.1136/bjsports-2022-106195
Suman, S., Pravalika, J., Manjula, P., & Farooq, U. (2023). Gender and CVD- Does it really matters? *Current Problems in Cardiology*, Article 101604. https://doi.org/10.1016/j.cpcardiol.2023.101604
Suni, E., & Dimitriu, A. (2023, December 8). *What is "revenge bedtime procrastination"?* Sleep Foundation. https://www.sleepfoundation.org/sleep-hygiene/revenge-bedtime-procrastination
Sykes, J. (2015, March 6). *Crossing the food desert*. University of North Carolina Greensboro Institute for Community and Economic Engagement. https://communityengagement.uncg.edu/crossing-food-desert/
Stats. (2019, July 23). *Job satisfaction and wellbeing*. https://www.stats.govt.nz/reports/job-satisfaction-and-wellbeing/
Sturm, R., & Cohen, D. A. (2019). Free time and physical activity among Americans 15 years or older: Cross-sectional analysis of the American Time Use Survey. *Preventing Chronic Disease*, *16*(190017). http://dx.doi.org/10.5888/pcd16.190017
Tolin, D. F., & Foa, E. B. (2006). Sex differences trauma and posttraumatic stress disorder: A quantitative review of 25 years research. *Psychological Trauma: Theory, Research, Practice, and Policy, S*(1), 37–85. https://doi.org/10.1037/0033-2909.132.6.959
Tsaur, S. H., Ku, P. S., & Luoh, H. F. (2015). Problem-focused or emotion-focused: Which coping strategy has a better effect on perceived career barriers and choice goals? *Asia Pacific Journal of Tourism Research, 21*(4), 425–442. https://doi.org/10.1080/10941665.2015.1051488
Ugai, T., Sasamoto, N., Lee, H.-Y., Ando, M., Song, M., Tamimi, R. M., Kawachi, I., Campbell, P. T., Giovannucci, E. L., Weiderpass, E., Rebbeck, T. R., & Ogino, S. (2022). Is early-onset cancer an emerging global epidemic? Current evidence and future implications. *Nature Reviews Clinical Oncology*, *19*(10), 656–673. https://doi.org/10.1038/s41571-022-00672-8
Institute for Community and Economic Engagement. (2012, July 17). *Bringing a small oasis to a 'food desert.'* University of North Carolina Greensboro Institute for Community and Economic Engagement. https://communityengagement.uncg.edu/bringing-a-small-oasis-to-a-food-desert/
U.S. Bureau of Labor Statistics. (2023, July 7). *Time spent in leisure and sports activities, 2022*. https://www.bls.gov/opub/ted/2023/time-spent-in-leisure-and-sports-activities-2022.htm
U.S. Census Bureau. (2021, March 18). *Census Bureau estimates show average one-way travel time to work rises to all-time high*. https://www.census.gov/newsroom/press-releases/2021/one-way-travel-time-to-work-rises.html
U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans.* 2nd ed. U.S. Department of Health and Human Services. https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
Veronese, G., Pepe, A., Dagdouke, J., Addimando, L., & Yagi, S. (2017). Measuring well-being in Israel and Palestine: The subjective well-being assessment scale. *Psychological Reports, 120*, 1160–1177. https://doi.org/10.1177/0033294117715479
Vinokur, A. D., & van Ryn, M. (1993). Social support and undermining in close relationships: their independent effects on the mental health of unemployed persons. *Journal of Personality and Social Psychology, 65*(2), 350–359. https://doi.org/10.1037//0022-3514.65.2.350
Wang, F., & Szabo, A. (2020). Effects of yoga on stress among healthy adults: A systematic review. *Alternative Therapies in Health and Medicine, 26*(4), AT6214.
Wang, K., Marbut, A. R., Zheng, D., & Peet, J. Z. (2023). Stressor appraisals among adults in late middle age and late adulthood in the United States: Applying the intersectionality framework. *International Journal of Stress Management*, *30*(1), 47–56. https://doi.org/10.1037/str0000283
Weston-Williamson, M. (2023, January 5). *The state of paid medical and family leave in the US in 2023.* The Center for American Progress. https://www.americanprogress.org/article/the-state-of-paid-family-and-medical-leave-in-the-u-s-in-2023/
Wexler, L. (2014). Looking across three generations of Alaska Natives to explore how culture fosters indigenous resilience. *Transcultural Psychiatry, 51*, 73–92. https://doi.org/10.1177/1363461513497417
Wolff, M. B., O'Connor, P. J., Wilson, M. G., & Gay, J. L. (2021). Associations between occupational and leisure-time physical activity with employee stress, burnout and well-being among healthcare industry workers. *American Journal of Health Promotion, 35*(7), 957–965. https://doi.org/10.1177/08901171211011372
World Health Organization (2024, March 1). *Obesity and overweight*. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Key Terms

allostatic load cumulative health toll of stressors, including the body's biological response and secondary health impacts of stress-related changes to behaviors
burnout state in which chronic stress has led to lack of energy and disillusionment
climacteric decline in and eventual loss of the ability to reproduce
erectile dysfunction persistent inability to achieve or maintain penile erection
Flynn effect phenomenon that younger generations perform better on intelligence tests than previous generations
gut-brain axis bidirectional connections between the nerves of the digestive system and the central nervous system
menopause cessation of the menstrual cycle
metabolism chemical process by which bodies convert food to energy
osteoporosis age-related loss of bone mass
postformal thought intuitive thinking that combines the logic of formal operations with relativism
presbycusis age-related hearing loss
presbyopia age-related loss of visual acuity
primary aging aging that results from inevitable and genetically influenced biological changes
proprioception body's sense of location and movement in space
relativism recognizing that some problems or dilemmas may have more than one viable solution, depending on a person's perspective and priorities
resilience person's ability to successfully adapt to difficult life experiences by making mental, emotional, and behavioral adjustments to cope
sarcopenia age-related loss of muscle mass
secondary aging aging that results from behavioral or environmental factors
wisdom expert knowledge concerning the fundamental pragmatics of life

Summary

13.1 Physical Development in Middle Adulthood

- In middle adulthood, the brain processes information differently. Processing speed slows because of increased distractibility and cortical activation during cognitive tasks, while the positivity effect causes greater cognitive attention to positive stimuli.
- Middle age brings a decrease in the sharpness of sensory systems, such as vision and hearing. Presbyopia results in loss of visual acuity. Presbycusis results in the loss of hearing acuity.
- The body in middle adulthood experiences numerous changes, such as loss of muscle, bone density, and skin elasticity.
- While changes in cognitive processing, sensory acuity, and body health are a natural part of aging, healthy diet and exercise, paired with positive social interactions and attitude, can mitigate many of the physical and psychological effects.

13.2 Reproductive and Sexual Changes in Middle Adulthood

- Middle adulthood is a time of reproductive change. People will likely have children at the beginning of middle adulthood and then experience reproductive declines later in middle adulthood, known as the climacteric.
- Pregnancy causes a significant increase in estrogen and progesterone, which can cause changes in sensations, as well as breast swelling and loosening of the connective tissues throughout the body.
- Females in midlife experience menopause when sex hormones such as estrogen and progesterone gradually decline, resulting in diminished reproductive ability as well as both temporary and long-term effects to their cognitive and physical well-being.
- Middle-aged males experience a gradual decline in testosterone and sperm production, which decreases

their reproductive ability and increases the risk of osteoporosis and ED.
- Although they may have sex less frequently than younger adults, many middle-aged people continue to experience satisfying sex lives, and this is associated with positive physical, cognitive, and psychological outcomes.

13.3 Cognition in Middle Adulthood

- In middle adulthood, cognition undergoes subtle changes to memory, problem-solving ability, and processing speed. While some aspects of cognition decline (such as the efficiency of working memory and processing/perceptual speed), others remain stable or increase (such as practical problem-solving).
- Intelligence in middle adulthood demonstrates increases in crystalized functions and stability in fluid ones. Wisdom may be developed with experience.
- Creativity reaches a high point for many in middle age with the combination of divergent and convergent thinking processes.

13.4 Maintaining Health and Well-Being in Middle Adulthood

- Middle adulthood brings a rise in health concerns for many. Chronic diseases, such as cancer and heart disease, replace unintentional injury as the leading causes of death.
- The frequency of certain cancers in middle adulthood is increasing. Health behaviors that can reduce cancer risk include not smoking, maintaining a healthy diet, and receiving certain vaccinations.
- Cardiovascular disease is a leading cause of death in middle adulthood. Risk is increased by high blood pressure and high cholesterol.
- Changes in body composition and weight can increase the risk of type 2 diabetes.
- Several factors including regular exercise, a Mediterranean diet, and high-quality sleep contribute to adult health and promote successful aging of the mind and body.
- Stress can advance aging but can be managed through social support and adopting a healthy mindset.
- Most adults have experienced a traumatic event by midlife. Resilience is promoted by social support and a hopeful mindset.
- Work-life balance is affected by earnings, policies, workplace locations, and schedules. While job satisfaction generally increases with age, particularly when adults are able to move from one workplace, those with high amounts of work dissatisfaction may experience burnout.

Review Questions

1. Presbycusis is most likely to affect a person's ability to detect what type of stimulus?
   a. bright colors
   b. dark colors
   c. low-pitched noises
   d. high-pitched noises

2. Sarcopenia describes the process during middle adulthood that leads to which outcome?
   a. losing weight without trying to
   b. increased calcification of the spine
   c. hardening of the lenses in the eyes
   d. gradual loss of muscle

3. Compared to younger adults, how does cortical activation relate to processing speed for middle-aged adults?
   a. Middle-aged adults have slower processing speed due to activation of larger areas of the cortex.
   b. Middle-aged adults have slower processing speed due to activation of smaller areas of the cortex.
   c. Middle-aged adults have faster processing speed due to activation of larger areas of the cortex.
   d. Middle-aged adults have faster processing speed due to activation of smaller areas of the cortex.

4. What is one complication resulting from presbyopia?
   a. difficulty seeing objects far away
   b. difficulty seeing objects close up
   c. difficulty hearing high pitched sounds
   d. difficulty hearing low pitched sounds

5. Why might some adults with hearing loss choose not to use a hearing aid?
   a. They do not believe that hearing aids are effective.
   b. Modern hearing aids are too bulky and noticeable.
   c. They deprioritize their hearing compared to other issues due to health-care costs.
   d. They do not want others to shout at them due to the assumption that they cannot hear.

6. What occurs during the years of the climacteric?
   a. the decline of reproductive ability for individuals assigned female at birth
   b. the end of reproductive ability for individuals assigned male at birth
   c. the decline of reproductive ability for individuals assigned male at birth and the end of reproductive ability for individuals assigned female at birth
   d. the decline of reproductive ability for individuals assigned female at birth and the end of reproductive ability for individuals assigned male at birth

7. The first drugs marketed to treat erectile dysfunction were originally formulated for what purpose?
   a. treating male pattern baldness
   b. controlling hypertension
   c. regulating glucose for people with type 2 diabetes
   d. reducing pain associated with scleroderma

8. During the perimenopause phase, how may hot flashes contribute to temporary memory problems and other cognitive concerns?
   a. by raising the body temperature
   b. by causing stress throughout the day
   c. by disrupting blood flow to the brain
   d. by causing sleep disturbance at night

9. Postpartum changes to the body of the person who has given birth can result in what changes to feet?
   a. ingrown toenails with risk of infection
   b. smaller feet and higher feet
   c. bigger feet with lower arches
   d. bunions and/or hammertoe

10. Sexual activity in middle adulthood has been observed to increase what?
   a. cognitive health
   b. depression
   c. fluid intelligence
   d. crystallized intelligence

11. Which strategy can help middle-aged adults improve working memory skills?
   a. reducing consumption of polyunsaturated fats
   b. regularly taking intelligence tests to stimulate problem-solving
   c. solving puzzles like Sudoku or crossword puzzles
   d. regularly engaging in physical exercise

12. What problem-solving characteristic makes postformal thought different from formal operational thinking?
   a. relativism
   b. creativity
   c. dualism
   d. convergent thinking

13. In general, research has found that in middle adulthood, crystallized intelligence tends to
   a. not change
   b. gradually decrease
   c. gradually improve
   d. sharply decline

14. Why is wisdom more likely to occur in older age?
   a. reduced fluid intelligence
   b. many lived experiences
   c. higher levels of creativity
   d. greater crystalized intelligence

15. At middle age, the leading cause of death shifts from unintentional injury to what two issues?
   a. cardiovascular disease and cancer
   b. cancer and diabetes
   c. diabetes and suicide
   d. suicide and cardiovascular disease

16. While the symptoms of a heart attack can differ between men and women, which of them is common to both?
   a. chest pain
   b. shortness of breath
   c. back pain
   d. anxiety

17. According to the specific personality styles hypothesized by Friedman and Rosenman, what psychological characteristic is most associated with cardiovascular disease?
   a. competitiveness
   b. passiveness
   c. hostility
   d. patience

18. What are the outcomes of adopting a stress-as-enhancing mindset at work?
   a. increased physical health and interactions with coworkers
   b. greater likelihood of being promoted
   c. decreased sleep
   d. lower productivity

19. How does the job satisfaction for workers who change jobs or workplaces over the course of their career compare to those who remain within the same workplace?
   a. Their job satisfaction is unpredictable.
   b. They do not differ in job satisfaction.
   c. They have lower job satisfaction.

d. They have higher job satisfaction.

20. What can be said of the current status of the wage gap between men and women?
a. The wage gap no longer exists in the modern workplace.
b. The wage gap is narrowest for young adults.
c. The wage gap is consistent throughout life.
d. The wage gap is narrowest in middle adulthood.

21. Higher levels of physical leisure activity correspond to what?
a. increased life expectancy
b. reduced stress in retirement
c. reduced cortical thickness in the brain
d. better reported relationships with romantic partners

22. What do most employees who currently work from home say when asked if they would like to continue working from home?
a. They would prefer to return to the workplace.
b. They are unsure.
c. They would prefer to remain working from home in some capacity.
d. Their decision depends on the kind of work.

Check Your Understanding Questions

23. Describe how brain changes in middle adulthood can hinder or help judgment or problem-solving.

24. Identify and explain two factors that are associated with better brain health in adulthood.

25. Identify and explain why postpartum changes to the body of the person who gave birth may be related to loosening of the connective tissues during pregnancy.

26. What might influence sexual activities in middle age?

27. Identify cross-cultural differences in the way persons assigned female at birth perceive menopause.

28. What positive changes in cognition might be expected in middle adulthood?

29. Explain why crystallized intelligence gradually increases over adulthood.

30. What is the Flynn effect, and what factors might explain it?

31. Why is strength training an important activity as adults age?

32. How is sleep quality defined?

33. What are the benefits of a four-day workweek?

34. Explain the terms “motherhood wage penalty” and “fatherhood wage premium” with respect to gender disparity in worker pay.

Personal Application Questions

35. Think about an older sibling, cousin, or adult you know who is in their 30s, 40s, or 50s. Have you noticed any physical changes in them (e.g., changes in vision, stamina, or muscle strength)? How do you think these changes might affect their daily lives?

36. Middle adulthood is associated with changes in memory and information processing. Reflect on a conversation you’ve had with an older family member or mentor about their experiences with forgetfulness or multitasking. How do their experiences compare to what you expect at your current age?

37. Consider someone in your life who is in middle adulthood and has maintained regular exercise or other healthy habits. What benefits do you think they experience because of these habits, and how do you imagine these might change as they continue to age?

38. Reflect on an older sibling, cousin, or family member who is experiencing or has experienced the physical changes of middle adulthood. How have you observed these changes affect their daily life, particularly in areas such as energy levels, physical activity, or health concerns?

39. Consider the relationship between intimacy and well-being as discussed in this section. Think about a middle-aged relative or someone you know—how do you think their relationships and social support systems contribute to their emotional health during this stage?

40. Think about someone in middle adulthood who you know, such as a parent or older sibling. How do they balance logical reasoning with practical experience when making decisions? Can you give an example of how they apply what the text describes as postformal thinking in their daily life?

41. Reflect on a situation in which someone in middle adulthood had to solve a complex problem, whether at work, in their family, or in another setting. How might their problem-solving skills differ from those of a younger adult? Consider how the text discusses the role of experience and memory in middle-aged adults' problem-solving abilities.

42. s you think about the concept of intelligence across the lifespan, how do you believe it has changed for someone you know in middle adulthood? Reflect on whether you have noticed changes in their fluid or crystallized intelligence and provide examples that align with the text's descriptions.

43. Reflect on someone in your life who is currently in middle adulthood (such as a parent, older sibling, or mentor). How do they manage their physical health? What specific habits or lifestyle choices have they adopted that you find inspiring or worth emulating?

44. Middle adulthood can bring challenges related to maintaining physical fitness and managing chronic conditions. If you were in a health-care role, how would you advise a middle-aged patient who is struggling with exercise motivation due to time constraints? What strategies might be most effective for promoting long-term health?

45. With advancing age, sensory abilities such as vision and hearing often decline. How might you adjust your living environment or daily activities to accommodate someone experiencing these sensory changes? Consider both practical adjustments and emotional support.

Essay Questions

46. Maintaining healthy habits is crucial during middle adulthood to prevent age-related decline. Discuss the role of exercise, diet, and preventive health measures in promoting well-being during middle adulthood. How do these habits mitigate the physical changes that typically occur during this stage of life? Provide examples from the text and consider how individuals might adjust their routines to maintain health as they age.

47. How would you describe the "positivity effect" regarding changes in perception in middle adulthood? What are the benefits of this perceptual shift? Use examples in your answer.

48. Menopause is a significant transition that women experience during middle adulthood, with both physical and emotional effects. How does culture influence the way women experience and cope with menopause? Discuss the role of societal expectations, cultural beliefs, and support systems in shaping the experiences of women going through this stage.

49. Evaluate how creativity changes during middle adulthood. What factors influence whether creativity remains stable, grows, or declines during this stage? Include considerations such as work, hobbies, and life experiences. Imagine you are a career counselor advising a middle-aged client who feels they have lost

their creative edge. What strategies could you suggest to help reignite their creativity?

50. Examine the role of mental and emotional well-being in physical health during middle adulthood. How do stress, relationships, and work-life balance contribute to overall health outcomes? Imagine you are a health coach working with a middle-aged client who is struggling with these challenges. What specific recommendations would you give them to maintain positive mental health and overall well-being? Provide examples from the text that show how individuals can maintain positive mental health while navigating the challenges of middle adulthood.

51. In this chapter, you learned that job satisfaction may be impaired by remaining within the same organization for a long period of time. According to a 2023 report by insurance brokerage Gallagher (2023), more than half of employers surveyed reported an increase in employee turnover. Based on what you have learned in this chapter, what can businesses do to increase employee satisfaction and retention? Explain why you make these recommendations.

Social and Emotional Development in Middle Adulthood (Ages 30 to 59)

14

FIGURE 14.1 Middle adulthood is characterized by an expansion of roles and responsibilities at home, work, and in the community. (credit top left: modification of work "Grandpa" by NappyStock/nappy, Public Domain; credit top middle: modification of work "Smartphone in Hands" by Alyssa Sieb/nappy, Public Domain; credit top right: modification of work "Bangkok Traffic" by Bernard Spragg. NZ/Flickr, Public Domain; credit bottom left: modification of work "Man cooks at Home with Tablet Recipe Guide" by "Adedoyin"/nappy, Public Domain; credit bottom middle: modification of work "Woman Using Smartwatch and Tablet" by "Adedoyin"/nappy, Public Domain; credit bottom right: modification of work "Woman on phone" by NappyStock/nappy, Public Domain)

CHAPTER OUTLINE

14.1 Development of Self, Personality, and Identity in Middle Adulthood
14.2 Contexts: Love and Romance in Middle Adulthood
14.3 Households and Parenting in Middle Adulthood
14.4 Transitions in Caregiving Roles in Middle Adulthood
14.5 A Successful Middle Adulthood

WHAT DOES PSYCHOLOGY SAY? It's Friday afternoon rush hour. Lisha calls her son and asks him to get dinner started. She makes a mental note to remind her daughter to check that her uniform and water bottle are clean and ready for her game tomorrow. She also sets a reminder to make a follow-up oncology appointment for her dad next week. Maybe she can reschedule that client meeting and leave work early to do that next Thursday? Life is busy, some days feel overloaded with scheduling and communication, and Lisha is tired. But Lisha is grateful that her family can pull together to get through busy weeks like this one, and the last one, and probably the next one. Maybe next year, she can afford to take her family on that big vacation she dreams about in her nonexistent free time. Like many people in middle adulthood, Lisha has a lot on her mind.

- As one of the longest stages of lifespan development, how does love and family life evolve and adapt to the changes encountered during middle adulthood?
- Are there individual, group, or environmental variables that promote health, happiness, and satisfaction amid these changes?
- What is the "sandwich generation"?
- Does all this change and responsibility lead to the dreaded "midlife crisis"?

In this chapter, you'll learn what current research says about these questions and more.

14.1 Development of Self, Personality, and Identity in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe theories regarding the development of self during middle adulthood
- List opportunities and obstacles to achieving generativity across middle adulthood
- Explain stability and development of personality during middle adulthood
- Describe ways in which identity develops across middle adulthood

Forty-year-old Amir's life is much different than it was fifteen years ago. At twenty-five-years-old, he never could have pictured that his hours, days, and weeks would be spent cultivating his garden, raising his kids (plus two rescue cats), and managing a team of employees. And though his days are long and often exhausting, he feels more certain of himself and his goals than he ever has. His time in the garden allows him to unwind with a quiet yet productive activity.

Sandwiched between the optimistic beginnings of early adulthood and the experience and wisdom of older adulthood, socioemotional development in middle adulthood may often be overshadowed. However, between ages thirty and fifty-nine years, adults experience many important psychosocial changes as they take on increasing responsibilities within their relationships, work life, homes, and communities, known as **role expansion**. For many adults, role expansion results in an increased sense of control and accomplishment known as mastery. However, psychoanalytic theorists have noted that while this time of life is typically a period of positive growth, failure to manage and embrace the challenges of middle adulthood may result in a feeling of developmental stagnation or crisis. In this section, you will learn theories on the development of personality in middle adulthood in the context of research regarding stability and change.

Self in Middle Adulthood

Spanning three decades, middle adulthood is typified by important changes in our sense of self. In this section, you will review how different theories describe and explain the self during midlife. As you read about these theories, be on the lookout for what features these developmental theories have in common and for the concepts that are unique to each.

Psychosocial Theory of Development: Generativity versus Stagnation

Erik Erikson's lifespan theory of psychosocial development (Erikson, 1963) can be a valuable framework for articulating the unique challenges and outcomes of the development of self in middle adulthood. Erikson called the primary challenge of this stage of life **generativity versus stagnation**. The key to healthy development of self at this time of life is to resist the temptation to rest on the accomplishments and values of young adulthood, and focus one's energy on giving back to others through mentoring and care of others, as well as continuing to have productive and creative endeavors that are beneficial to the self and society—a developmental task Erikson called **generativity**. This term intentionally evokes connotations of productivity, as well as the importance of guidance and creating a better world for future generations. Erikson called it the "virtue of care," which includes "the care to do" (taking the initiative to generate creative solutions in the form of "ideas or products") as well as the task of "caring for" or "taking care of" those who need guidance or protection (Evans, 1967). Generativity, broadly, is about having a sense of productiveness and a sense of

purpose, feeling that who you are and what you are doing is contributing to the wellbeing of society, your family, your children, your culture, and/or your career. Some types of generativity included biological (having biological offspring), parental/caregiver (nurturing and raising children), or cultural generativity (contributing to culture)

Generativity requires a role expansion that goes beyond self-serving to the service of others, including family, workplaces, community, and society (McAdams & Guo, 2015; Wrightsman, 1994). For many, rising to the challenge of these generative roles results in the rewarding experience of role enhancement (Sieber, 1974). However, Erikson warned that ignoring or resisting the generativity challenge can result in **stagnation**, or unwillingness to show generative concern, which could be experienced as an unsatisfying developmental plateau or even as a panicked and narcissistic regression to immature self-absorption.

Seasons of Life

Erikson's theory of generativity is not the only one to reflect the personal experiences of its author. In the 1970s, U.S. psychologist Dan Levinson used interviews with adult men to outline his book *The Seasons of a Man's Life* (Levinson, 1986), saying, "At 46, I wanted to study the transition into middle age in order to understand what I had been going through myself." Levinson used the term "life structure" to describe the "pattern or design of a person's life at any given time," based on how the person chooses to prioritize their time and energy. He proposed that men develop through various "eras" across the lifespan, with "transition" periods between each era. According to Levinson, adult men transition into middle adulthood between the ages of twenty-eight and thirty-three years[1] as they become aware of possible missteps taken in the naivete of early adulthood and revise their goals and priorities to move forward with greater clarity and maturity. Ages thirty-three through forty years represent the second life structure of adulthood where the focus shifts to making contributions to family, work, friends, and community. Levinson's midlife transition (ages forty to forty-five years) prompts men to evaluate whether they accomplished the goals of young adulthood before entering middle adulthood, where the patterns and choices reflect many aspects of Erikson's concept of generativity.

Levinson's spouse Judy worked with him to conduct interviews with adult women during the 1980s and early 1990s. These findings were published in *The Seasons of a Woman's Life* (Levinson, 1997) and concluded that the lives of adult women exhibit many of the same patterns as those of men. Judy Levinson finished this work after Levison's death in 1994. It should be noted that the conclusions of Levinson's longitudinal studies of men and women were based on a small sample of mostly White American adults from the same generation, so these findings cannot be generalized to adults beyond those demographic characteristics.

Valliant's Theory of Successful Aging

Expanding the influence of the psychoanalytic approach to the study of adult psychosocial development, psychiatrist George Valliant added that adults respond to life transitions by employing defense mechanisms. A **defense mechanism** is a psychological strategy for managing the anxiety and stress triggered by developmental challenges (Vaillant et al., 1986). Also based on a longitudinal study of adult men, Valliant and colleagues, argued that some defense mechanisms, like humor and sublimation (i.e., channeling anxiety toward a productive outlet), are mature ways of handling stress and promote positive aging during life transitions. Other defense mechanisms, like denial or acting out, are immature coping mechanisms and can inhibit well-being and healthy growth (Prout et al., 2022). The repeated concern with crisis or anxiety that links the theoretical views of Erikson, Levinson, and Valliant on midlife development served as the basis for the myth of the "midlife crisis."

Personality Development in Middle Adulthood

Theories of personality can be generally classified into two approaches. First are those that emphasize traits,

1 Levinson included the late twenties in his definition of middle adulthood, in a time before emerging adulthood was incorporated into a discussion of the lifespan.

including their stability over time and their interaction with the environment. Second are those that emphasize development and growth, including the power of the environment to influence personality change.

Recall from 4.2 Temperament and Personality in Infants and Toddlers, the Big Five or Five-Factor model of personality describes personality according to five traits: conscientiousness, agreeableness, neuroticism, openness, and extraversion (sometimes represented by the acronym OCEAN) (McCrae & Costa, 2008). Trait theories generally predict that while environments may change, our predisposition to respond to certain environments remains stable. In other words, personality predicts our feelings, behavior, and even the environments we choose for ourselves—a process known as niche-picking.

On the other hand, developmental approaches to personality assert that personality develops over time in response to challenges or support encountered in our social environments. Rogers's humanistic theory (1980) took a growth-oriented approach to personality development, asserting that people require acceptance, genuineness, and empathy in their social environments to nurture positive and congruent (or authentic) personality growth over the lifespan (Figure 14.2).

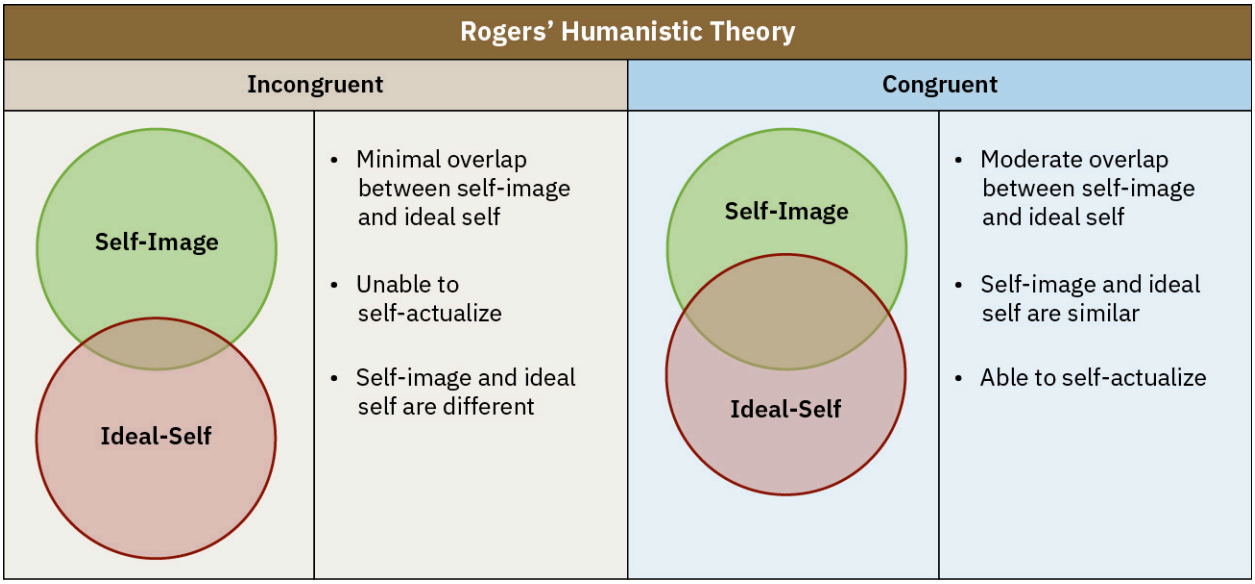


FIGURE 14.2 Rogers proposed that supportive social environments characterized by acceptance, genuineness, and empathy allow a person to more comfortably align their actual with their ideal self, which encourages congruent personality development (Wong, 2015). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Trait Theories

Since 1995, the MIDUS (Midlife in the United States) project has been collecting longitudinal data on American adults ages twenty-five years and older (and the more recently developed MIDJA studying adults in Japan). Some of these participants have been followed for more than thirty years, providing behavioral, psychological, social, and biological data on their aging. Data from MIDUS and other longitudinal research find that personality traits generally remain stable once a person reaches adulthood (Damian et al., 2019; Schaie & Willis, 1991). In other words, if you were introverted at twenty-five years old, you're unlikely to be extraverted at fifty years old. This overall stability can be explained by gene-environment correlations, the reciprocal influence between an individual's genetic predispositions and their environment, which often encourages the expression of their genetic predispositions. In the case of personality, evidence suggests that its temperamental foundations are largely genetically determined (Mottus et al., 2019) and associated with differences in the structure and functioning of the nervous system (Degnan & Fox, 2007; Toschi et al., 2018).

In other words, each person's genetic predispositions are naturally more compatible with the demands of certain environments, a match known as goodness of fit (Wachs, 1994). Individuals will be more likely to seek

out good-fitting, comfortable environments that, in turn, encourage their natural dispositions to thrive (Sutin & Costa, 2010). For example, an extraverted adult might feel comfortable in a job that requires confidence in approaching and talking to strangers, so they become a salesperson or work in customer service. Their job allows them to practice and be rewarded for behaviors associated with their extraverted personality, which leads to an increase in the expression of those behaviors. The alignment of a person's personality with their environment supports the stability of personality over time in a gene-environment correlation and is predictive of successful aging (Kooij et al., 2020).

Growth and Development Theories

Researchers have studied whether there environments or experiences that predict or even require personality change over time. Cross-cultural comparisons of the stability of temperamental and personality traits suggest that culturally valued traits have more stability. While many individualistic societies like the United States prioritize individuality and independence, many collectivist cultures value a person's investment in and conformity to group goals, whether at work or at home, which may be facilitated by adjusting one's personality to meet the demands of the situation. For example, compared to Americans, Japanese adults show somewhat more variation in personality traits over time as they adapt their personality to best serve their environment (rather than vice versa) (Chopik & Kitayama, 2018). Even in individualistic countries, research has shown potential for growth and change in persaonality characteristics based on experiences. For example, in the United States and Australia, adults who have taken on greater leadership roles at work have shown increases in conscientiousness (a Big Five personality trait associated with a willingness to be responsible, organized, and goal directed) (Li et al., 2021).

Consistent with Rogers's humanistic theory of personality, individual differences in social contexts may predict maladaptive changes to personality. Negative experiences in balancing work and family roles (a major task for middle-aged adults) predict increases in neuroticism (a Big Five personality trait associated with anxiety and self-doubt) and decreases in conscientiousness (Li et al., 2024). Adults who experience discrimination in their day-to-day lives are also more likely to show increased neuroticism and decreased conscientiousness and agreeableness (a Big Five personality trait associated with being trusting and friendly) over a ten-year-period (Sutin et al., 2016). Daily and pervasive stress, including in the form of discrimination and microaggressions, can negatively impact our psychological functioning and health outcomes. However, intervention and prevention efforts aimed at reducing discrimination experiences and increasing positive coping may represent an important pathway in promoting resilience (Lewis et al., 2015).

INTERSECTIONS AND CONTEXTS

Historical Context and Personality Development

Psychologists have noted that the way age is defined and measured may affect findings on adult personality. Typically, longitudinal studies of personality measure *chronological age*, or age in years since birth, but researchers can also measure *subjective age*, which describes how old a person feels. Having a lower subjective age (feeling younger than you are) predicts increases over time in openness, agreeableness, and conscientiousness (Stephan et al., 2015). As for chronological age, a person's generational cohort reflects their experiences, which can include different historical challenges, such as war, poverty, and discrimination, as well as changing cultural norms and values, such as loyalty, collaboration, and skepticism.

When researchers compared three cohorts of adults (those born 1883–1913, 1914–1944, and 1945–1976), they found that in middle adulthood, those cohorts who were born in later (more recent) demonstrated "lower levels of maturity-related traits (such as agreeableness and neuroticism) and higher levels of agency-related traits (such as extraversion and openness)" compared to middle-aged adults born in earlier (older) cohorts. Researchers speculated that for later-born cohorts, increases in cultural individualism might promote agency-related traits of extraversion and openness, whereas delayed entry into roles such as spouse and parent

compared to the past might decrease maturity-related traits. Later-born cohorts were also more likely to become more agreeable with age, compared to earlier-born cohorts (Brandt et al., 2022). Age cohorts popularly known as the Silent Generation (born 1925–1945), boomers (born 1946–1964), Generation X (born 1965–1979), the millennials (born 1980–1994), and Generation Z (born 1995–2012) have each experienced important sociohistorical events and changes that shaped their development differently. Some examples are listed here. What others can you think of? How might these changes shape these generations values, personalities, and worldviews?

- *The Silent Generation*: Great Depression, World War II, radio broadcasts available in most homes
- *The Boomers*: Civil rights movement, Vietnam War, televisions available in most homes
- *Generation X*: Gulf War; September 11, 2001, terrorist attacks; cable TV in most homes
- *The Millennials*: Legalization of same-sex marriage, increased access to the internet and cell phones
- *Generation Z*: COVID-19, rise of social media

One thing is certain: personality development continues in meaningful ways in middle adulthood as adults select and adapt to changing roles at home, work, and in their communities. Whether certain personal qualities develop with age to enable or prepare adults for these changes, or whether it is the life changes themselves that foster personal growth, middle adulthood is associated with increasing socioemotional maturity. For example, the goal-oriented Big Five trait of conscientiousness is the trait most likely to increase from youth into middle adulthood, as adults juggle expanding responsibilities as caregivers, employees, and community servants (Wagner et al., 2019). In support of Erikson's virtue of care, adults in middle adulthood are more likely to make altruistic choices when presented with hypothetical dilemmas, compared to younger adults (Freund & Blanchard-Fields, 2014). They are also more likely than younger adults to report priorities consistent with generativity, such as feeling needed, showing concern for future generations, having an interest in teaching others, and taking actions to protect others (Einolf, 2014; McAdams et al., 1992).

The achievement of successful outcomes in middle adulthood appears to be highly influenced by the goodness-of-fit principle, or whether a person's interests, goals, abilities, and traits are aligned with their environments or experiences. For example, adults who find jobs that fit their personalities (like the extraverted salesperson) are more likely to be satisfied at work (Judge et al., 1998, 1999) because they are more likely to be good at the job, which leads to both intrinsic rewards (such as pride) and extrinsic rewards (such as praise and professional advancement) (Tett et al., 2013). On the other hand, negative interactions between family and work roles predict anxiety and subsequent negative adaptations to personality (Li et al., 2024). However, negative life events are not always correlated with negative personal development: adults who activated goal-oriented coping mechanisms in response to health fears associated with their possible selves were more likely to engage in healthy behaviors (Hooker & Kaus, 1994), and cancer survivors show a greater increase in personal mastery than those adults who have never had cancer (Pudrovska, 2010). The influence appears to be bidirectional: personal qualities can predict life experiences, and life experiences can affect personal growth.

Stability versus Change

So, is adult personality stable or changeable? Research suggests that, the answer is probably both. McAdams (1995) offers a theory of personality that attempts to resolve the inconsistencies in personality development data (Figure 14.3). He suggests that personality can be measured at three levels:

- level one: general dispositional traits
- level two: personal choices
- level three: personal narrative

McAdams argues that dispositional traits (such as those measured by the Big Five) are relatively stable over time (level one). However, the way people act on those traits (level two), including the choices they make to attain personal goals and adapt to life circumstances, and the subsequent life story or identity they build (level

three), can reflect both stability and change, depending on both personal and environmental factors.

FIGURE 14.3 McAdams proposed that personality is multilayered, which allows level one traits to remain relatively stable, even when level two personality-driven goals and actions and level three life experience might evolve and develop over time (McAdams, 2009; Owiti et al., 2020). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The Continuation of Identity Development

Our life story or personal narrative, as conceptualized by McAdams, continues to develop across adulthood. Our personal narrative helps to create an integrated sense of self by linking together our personality, priorities, and experiences into a coherent story or identity (McLean & Syed, 2015). So even though identity development emerges as a primary focus or challenge of adolescence and early adulthood in Erikson's framework, our identity continues to evolve and grow throughout adulthood to adapt to different goals and experiences (Kroger, 2015).

In a longitudinal study of adults at ages twenty-seven, thirty-six, forty-two, and fifty years, adults were asked the following questions regarding different domains of their identity:

- *"Do you have a conception of your occupational career?"* (occupational identity)
- *"Do you have an idea of what you expect from a close relationship?"* (intimate relational identity)
- *"Do you have an idea of the lifestyle according to which you would like to live?"* (lifestyle identity)
- *"Do you have a personal relationship to religion?"* (religious identity)
- *"Do you have a political opinion?"* (political identity)

Participant responses at each age were evaluated for the extent of their exploration and commitment to determine their identity status according to Marcia's identity framework introduced in 10.1 Theories of Adolescent Socioemotional Development. While identity statuses fluctuated for each domain at each age, the overall trend was progressively toward greater identity achievement with age, with women generally reaching identity achievement earlier than men (Fadjukoff et al., 2016). These findings are consistent with longitudinal and cross-sectional studies of ethnic identity, which find that people's ethnic identity labels (such as Mexican American or Latino) stabilize in adulthood, and ethnic identity achievement increases with age. In particular, generativity in adulthood seems linked to the development of ethnic identity. Adults who are involved in their community are more likely to be in the achievement status of ethnic identity (Feliciano & Rumbaut, 2019;

Maehler, 2021).

The Concept of the Midlife Crisis

How does the concept of the "midlife crisis" fit into our understanding of aging? The origin likely lies in the developmental frameworks proposed by Erikson and Levinson. Each is influenced, in some way, by the psychoanalytic concept of psychological turmoil, generated by the push-and-pull of our inner psyche. Whether it's the "psychological crisis" of Erikson's psychosocial stage of generativity versus stagnation, or the midlife review necessitated by Levinson's "midlife transition," the potential for a developmental crisis in middle adulthood made its way into WEIRD conceptions of aging.

Psychoanalytic psychologist Elliott Jaques is credited with coining the term "midlife crisis," when he predicted turmoil for those middle-aged adults facing the reality of their own aging and death without the security of established careers or family lives (Jackson, 2020). For women, the midlife crisis is often depicted as "empty-nest syndrome," which imagines that when their adult children have left the home, middle-aged mothers become depressed and adrift without their apparent primary purpose as caregivers. These portrayals soon came to be associated with caricatured "over-the-hill" middle-aged adults desperately seeking youthfulness in the defensive fantasies of cosmetic surgery, sports cars, or extramarital affairs. However, this stereotype does not authentically reflect the framework of Erikson or Levinson, nor is it supported by data on the typical experience of the midlife adult. Both Erikson and Levinson viewed this stage of life as a challenge to motivate healthy growth and avoid stagnation or crisis. In fact, Valliant's longitudinal study found that while middle adulthood was often a challenging time for the men, there was no greater incidence of psychological distress in middle adulthood than at other times of life. Those who found happiness from their generative efforts at work and home were the happiest and most well-adjusted.

LINK TO LEARNING

Perhaps because the work of Levinson and Valliant was initially focused on men, or perhaps because many of these psychoanalytic perspectives on the development of self in middle adulthood were constructed by men, the concept of midlife (and the potential risk of stagnation or crisis) is often represented in masculine ways. But what does it feel like for a woman to experience these same challenges, worries, and questions? Hollywood reporter Anne Philippi's TEDTalk about "why we need to disrupt middle age" (https://openstax.org/r/104DisrptMidAge) presents her experience of turning forty years old and her perspectives on middle age.

References

Brandt, N. D., Drewelies, J., Willis, S. L., Schaie, K. W., Ram, N., Gerstorf, D., & Wagner, J. (2022). Acting like a baby boomer? Birth-cohort differences in adults' personality trajectories during the last half a century. *Psychological Science, 33*(3), 382–396. https://doi.org/10.1177/09567976211037971

Chopik, W. J., & Kitayama, S. (2017). Personality change across the life span: Insights from a cross-cultural, longitudinal study. *Journal of Personality, 86*, 508–521. https://doi.org/10.1111/jopy.12332

Damian, R. I., Spengler, M., Sutu, A., & Roberts, B. W. (2019). Sixteen going on sixty: A longitudinal study of personality stability and change across 50 years. *Journal of Personality and Social Psychology, 117*, 674–695. https://doi.org/10.1037/pspp0000210

Degnan, K. A., & Fox, N. A. (2007). Behavioral inhibition and anxiety disorders: Multiple levels of a resilience process. *Development and Psychopathology*, *19*(3), 729–746. https://doi.org/10.1017/S0954579407000363

Einolf, C. J. (2014). Stability and change in generative concern: Evidence from a longitudinal survey, *Journal of Research in Personality, 51*, 54–61, https://doi.org/10.1016/j.jrp.2014.04.003.

Erikson, E. H. (1963). *Childhood and society* (2nd ed.). Norton.

Evans, R. I. (1967). *Dialogue with Erik Erikson*. Harper + Row.

Fadjukoff, P., Pulkkinen, L., & Kokko, K. (2016). Identity formation in adulthood: A longitudinal study from age 27 to 50. Identity, 16(1), 8–23. https://doi.org/10.1080/15283488.2015.1121820

Feliciano, C., & Rumbaut, R. G. (2018). The evolution of ethnic identity from adolescence to middle adulthood: The case of the immigrant second generation. Emerging Adulthood, 7(2), 85–96. https://doi.org/10.1177/2167696818805342

Freund, A. M., & Blanchard-Fields, F. (2014). Age-related differences in altruism across adulthood: Making personal financial gain versus contributing to the public good. *Developmental Psychology, 50*(4), 1125–1136. https://doi.org/10.1037/a0034491

Hooker, K. & Kaus, C. R. (1994). Health-related possible selves in young and middle adulthood. *Psychology & Aging, 9,* 126–133. https://doi.org/10.1037/0882-7974.9.1.126

Jackson, M. (2020). Life begins at 40: The demographic and cultural roots of the midlife crisis. *Notes and Records*, 74, 345–364. https://doi.org/10.1098/rsnr.2020.0008

Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. *Personnel Psychology, 52*,621–652. https://doi.org/10.1037/0021-9010.83.1.17

Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology, 83*, 17–34. https://doi.org/10.1037/0021-9010.83.1.17

Kooij, D., Zacher, H., Wang, M., & Heckhausen, J. (2020). Successful aging at work: A process model to guide future research and practice. *Industrial and Organizational Psychology, 13*(3), 345–365. https://doi.org/10.1017/iop.2020.1

Kroger, J. (2015). Identity development through adulthood: The move toward "wholeness." *The Oxford Handbook of Identity Development*, 65–80.

Lewis, T. T., Cogburn, C. D., & Williams, D. R. (2015). Self-reported experiences of discrimination and health: Scientific advances, ongoing controversies, and emerging issues. *Annual Review of Clinical Psychology*, *11*(1), 407–440. https://doi.org/10.1146/annurev-clinpsy-032814-112728

Levinson, D. J. (1986). *The seasons of a man's life*. Random House.
Levinson, D. J. (1997). *The seasons of a woman's life*. Random House.
Li, W.-D., Li, S., Feng, J., Wang, M., Zhang, H., Frese, M., & Wu, C.-H. (2021). Can becoming a leader change your personality? An investigation with two longitudinal studies from a role-based perspective. Journal of Applied Psychology, 106(6), 882–901. https://doi.org/10.1037/apl0000808
Li, W.-D., Wang, J., Allen, T., Zhang, X., Yu, K., Zhang, H., Huang, J. L., Liu, M., & Li, A. (2024). Getting under the skin? Influences of work–family experiences on personality trait adaptation and reciprocal relationships. Journal of Personality and Social Psychology. https://doi.org/10.1037/pspp0000476
Maehler, D. B. (2021), Determinants of ethnic identity development in adulthood: A longitudinal study. *British Journal of Developmental Psychology, 40*, 46–72. https://doi.org/10.1111/bjdp.12384
McAdams, D. P. (1995). What do we know when we know a person? *Journal of Personality, 63*(3), 365–396. https://doi.org/10.1111/j.1467-6494.1995.tb00500.x
McAdams, D. P. (2009). *The Person: An Introduction to the Science of Personality Psychology, 5th Edn*. New York, NY: Wiley.
McAdams, D. P. & de St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography. *Journal of Personality and Social Psychology, 62*, 1003–1015. https://doi.org/10.1037/0022-3514.62.6.1003
McAdams, D. P., & Guo, J. (2015). Narrating the generative life. *Psychological Science, 26*(4), 475–483. https://doi.org/10.1177/0956797614568318
McCrae, R. R., & Costa, P. T., Jr. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed). Guilford. https://psycnet.apa.org/record/2008-11667-005
McLean, K. C., & Syed, M. (2015). The Oxford handbook of identity development. Oxford University Press.
Mottus, R., Briley, D. A., Zheng, A., Mann, F.D., Engelhardt, L.E., Tackett, J. L., Harden, K. P., & Tucker-Drob, E. M. (2019). Kids becoming less alike: A behavioral genetic analysis of developmental increases in personality variance from childhood to adolescence. *Journal of Personality and Social Psychology, 117*, 635–2658. https://doi.org/10.1037/pspp0000194
Owiti, S., Hauw, D., & Collins, D. (2020). Applying a multilayer construct of social adaptability skills within talent development. *Frontiers in Psychology, 10*. https://doi.org/10.3389/fpsyg.2019.03006
Prout, T. A., Di Giuseppe, M., Zilcha-Mano, S., Perry, J. C., & Conversano, C. (2022). Psychometric properties of the defense mechanisms rating scales-self-report-30 (DMRS-SR-30): Internal consistency, validity and factor structure. *Journal of Personality Assessment, 104*(6), 833–843. https://doi.org/10.1080/00223891.2021.2019053
Pudrovska T. (2010). Cancer and mastery: do age and cohort matter? *Social Science & Medicine, 71*(7), 1285–1291. https://doi.org/10.1016/j.socscimed.2010.06.029
Rogers, C. R. (1995). *A way of being*. HarperOne.
Schaie, K. W., & Willis, S. L. (1991). Adult personality and psychomotor performance: Cross-sectional and longitudinal analyses. *Journal of Gerontology, 46*, 275–284.
Sieber, S. D. (1974). Toward a theory of role accumulation. *American Sociological Review, 39*(4), 567–578. https://doi.org/10.2307/2094422
Stephan, Y., Sutin, A. R., & Terracciano, A. (2015). Subjective age and personality development: A 10-year study. Journal of Personality, 83(2), 142–154. https://doi.org/10.1111/jopy.12090
Sutin, A., & Costa, P. (2010). Reciprocal influences of personality and job characteristics across middle adulthood. *Journal of Personality, 78*(1), 257–288. https://doi.org/10.1111/j.1467-6494.2009.00615.x
Sutin, A. R., Stephan, Y., & Terracciano, A. (2016). Perceived discrimination and personality development in adulthood. Developmental Psychology, 52(1), 155–163. https://doi.org/10.1037/dev0000069
Tett, R., Simonet, D., Walser, B., & Brown, C. (2013). Trait activation theory: Applications, developments, and implications for person-workplace fit. Handbook of Personality at Work, 71–100.
Toschi, N., Ricchelli, R., Indovina, I., Terracciano, A., & Passamonti, L. (2018). Functional connectome of the five-factor model of personality. Personality Neuroscience, 1, Article e2. https://doi.org/10.1017/pen.2017.2
Vaillant G. E., Bond, M., Vaillant, C. O. (1986). An empirically validated hierarchy of defense mechanisms. *Archives of General Psychiatry, 43*(8), 786–794. https://doi.org/10.1001/archpsyc.1986.01800080072010
Wachs, T. D. (1994). Fit, context, and the transition between temperament and personality. In C. F. Halverson Jr., G. A. Kohnstamm, & R. P. Martin (Eds.), *The developing structure of temperament and personality from infancy to adulthood*, 209–220. Psychology Press. https://doi.org/10.4324/9781315806853
Wagner, J., Ludtke, O., & Robitzsch, A. (2019). Does personality become more stable with age? Disentangling state and trait effects for the big five across the life span using local structural equation modeling. *Journal of Personality and Social Psychology, 116*(4), 666. https://doi.org/10.1037/pspp0000203
Wong, P. T. (2015, November). *Meaningful living group project as a grassroots positive mental health movement*. https://www.researchgate.net/publication/283504561_Meaningful_Living_Group_Project_as_a_Grassroots_Positive_Mental_Health_Movement
Wrightsman, L. S. (1994). Erikson's theory of psychosocial development. In *Adult Personality Development: Theories and Concepts*. SAGE Publications Inc. https://doi.org/10.4135/9781452233796

14.2 Contexts: Love and Romance in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain how attachment applies to development in middle adulthood
- Distinguish among various types of love
- Describe how marriage and divorce are changing in our society
- Discuss factors that influence dating, marital satisfaction, and divorce in middle adulthood

Sarah and Alex's relationship started out with lots of passion and intimacy when they were in their twenties. Once each other's safe haven in times of uncertainty and stress, they now—well into their forties—find themselves living separate lives. Sarah has lost trust in her spouse and finds herself snooping through Alex's text messages and emails. Alex complains that Sarah never shares what's on her mind anymore, so their arguments usually end in a stony silence. Both Alex and Sarah are unhappy, but neither one of them knows what to do next.

As theories of adult psychosocial and personality development suggest, the development of self in middle adulthood is inextricably tied to a person's relationships with others. In this section, you will examine the predictors and outcomes of attachment and romantic relationships in middle adulthood.

Attachment and Love in Middle Adulthood

In many ways, attachment theory is consistent with Erikson's psychosocial framework of the development of self in middle adulthood, perhaps because both are influenced by the psychoanalytic developmental perspective. At its core, attachment theory asserts that secure attachment relationships provide children with a secure base or safe haven from which to encounter new and challenging experiences. This framework was

later extended by Hazan and Shaver (1987) to apply to relationships in adulthood. Similarly, Erikson's psychosocial theory proposes that the comfort and security derived from forming and maintaining intimate relationships in young adulthood provide a developmental foundation for successfully encountering new generative responsibilities in middle adulthood.

A person's attachment style can be used to characterize close relationships in which a person has a relationship partner at any stage of life, such as to a romantic partner, a developing child, on aging parent. Evidence is somewhat inconclusive on the extent to which individual attachment styles vary across relationships and over time, with the stability of attachment style varying by attachment style, gender, life events, how attachment is measured, and time of measurement (Fraley, 2002; Hazan & Shaver, 1987; Pinquart et al., 2012; Waters, 2022).

Most adults identify their overall relationship styles as consistent with secure attachment (Hazan & Shaver, 1987). Securely attached adults are more likely to receive support from their partners in times of stress (Collins & Feeney, 2004), and they are also more likely to provide support to their significant others (Simpson et al., 1992), a behavior consistent with Erikson's generative virtue of care. Secure attachment to aging parents also increases adult children's likelihood of providing help to them while decreasing their perceived burden in providing such care. Conversely, avoidant attachment decreases the likelihood that adult children will provide care to aging parents and increases their perceived caregiver burden (Carpenter, 2001; Cicirelli, 1993; Karantzas, 2010).

Insecure attachment style in middle adulthood predicts poor health outcomes for adults, including inflammatory immune responses (Ehrlich et al., 2019; Gouin et al., 2019; Kidd et al., 2014). Stress is likely the mediating factor between insecure attachment style and immune dysfunction. Whether avoidant or anxious, adults with insecure attachment styles lack confidence that they will reliably receive support from others, and a perceived lack of social support is a primary predictor of stress-related health effects (Baron et al., 2016; Cohen, 2004).

A 2019 study of Mexican adults aged twenty to sixty-five years found that while secure attachment predominated among couple who were younger or were dating, anxious attachment was more common in middle adulthood relationships and first marriages (Pérez-Aranda et al., 2019). Pérez-Aranda and colleagues (2019) suggest that this increase in anxious attachment may be explained by the stress of simultaneously providing care to spouse, children, and aging parents in middle adulthood. These maladaptive attachment responses to the stress of caregiving in middle adulthood may also affect the quality of caregiving provided to children, with research finding that insecurely attached mothers are more likely to exhibit insensitive parenting during times of stress (van Ee et al., 2017) and promote unhealthy eating practices in their children (Messina et al., 2019); (Bost et al., 2014).

Adults with secure attachment styles demonstrate a greater willingness to form committed and psychological intimate relationships, which in turn increases their satisfaction with close relationships (Madey & Rogers, 2009). According to Sternberg's triangular theory of love (1986), intimacy and commitment form a type of close relationship that he called companionate love, which can exist across many types of family, friends, and other platonic relationships. Companionate love relationships feature the self-disclosure afforded by the closeness of psychological intimacy and the loyalty and reliability established when two people commit to spend time together. The third component of Sternberg's triangular theory of love is passion. Passion refers to feelings of longing, excitement, and attraction to another person. Sternberg referred to relationships that include all three components as complete or consummate love (2014). The three components of intimacy, commitment, and passion can exist singularly in relationships or in any combination, which can result in seven different kinds of relationships (Figure 14.4).

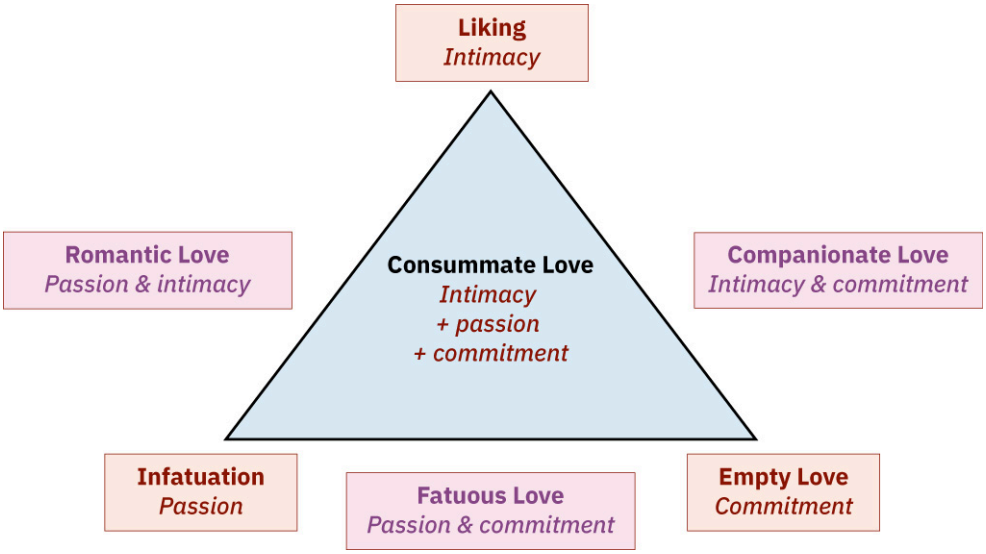


FIGURE 14.4 According to Sternberg's triangular theory of love, seven types of love can be described from combinations of three components: intimacy, passion, and commitment. (credit: modification of work "triangular theory of love" by "Lnesa"/Wikimedia Commons, CC0 1.0)

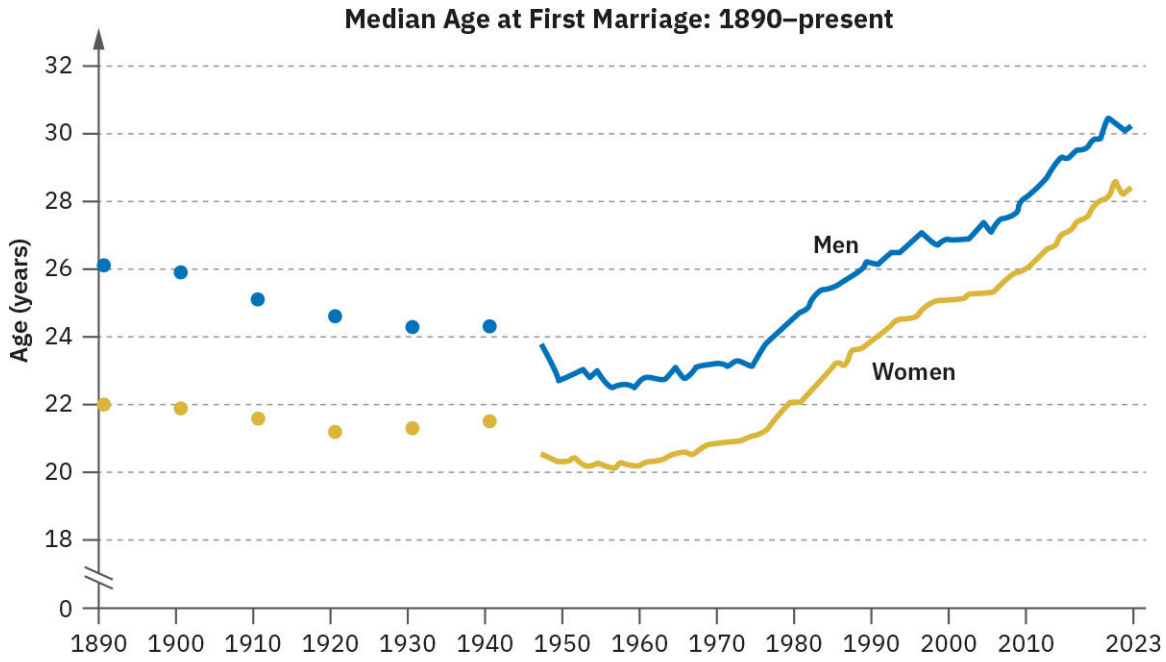
Sternberg's classification of love has been measured and validated cross-culturally (Sorokowski et al., 2021); however, the extent to which individuals experience each of the three components in their romantic relationships appears to vary across the lifespan. Feelings of passion and intimacy are increasingly experienced across adolescence, peak in early adulthood and show a slight decrease throughout middle adulthood (but always remaining present at a meaningful level). Across the lifespan, men report somewhat higher levels of passion in their relationships than women (Sumter et al., 2013). Commitment also peaks in young adulthood but does not exhibit much decline into middle adulthood. All three components are predictive of marital satisfaction in middle adulthood, with intimacy showing the strongest association, followed by commitment and passion (Yoo & Joo, 2022).

Marriage

Marriage is an important predictor of health and well-being in adulthood. Longitudinal studies find that married adults accumulate 77 percent more net worth than those who are single (Zagorsky, 2005). Marriage can reduce stress and protect health by acting as a source of economic security and available social support. Subsequently, married adults have lower mortality rates than single adults (Curtin & Tejada-Vera, 2019; Robles & Kiecolt-Glaser, 2003). For example, following the COVID pandemic in 2020–2021, married adults reported fewer negative impacts to their mental health, even when the lockdown resulted in the loss of household income (Jace & Makridis, 2021).

Contemporary Marriage in the United States

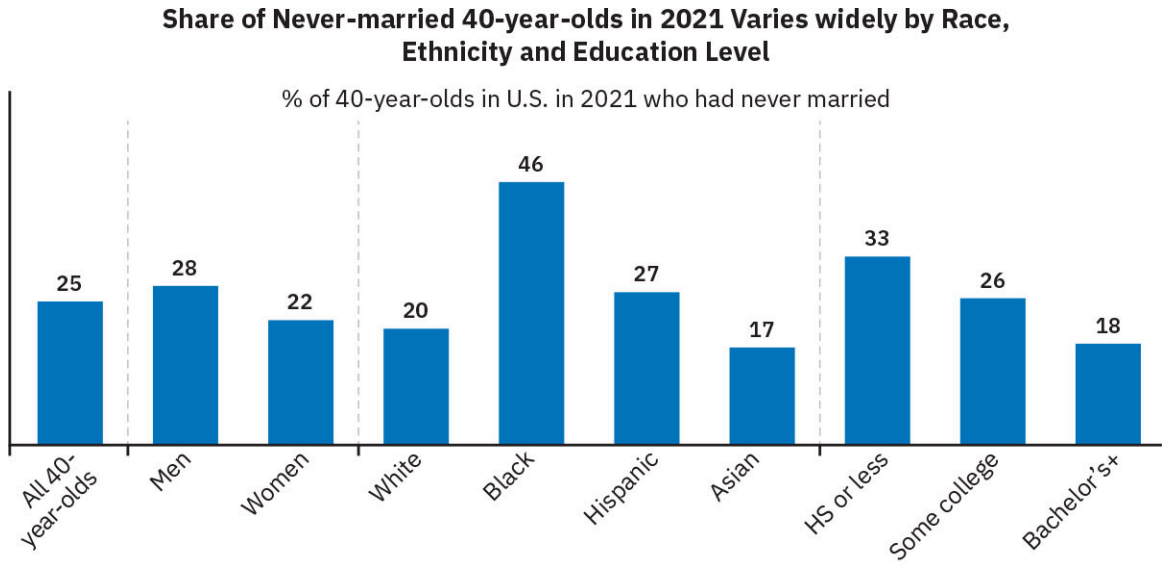
The median age for first marriage in the United States has climbed rapidly since the mid-1900s and is currently thirty years for men and twenty-eight years for women (Figure 14.5).



Source: U.S. Census Bureau, Decennial Censuses, 1890 to 1940, and Current Population Survey, Annual Social and Economic Supplements, 1947 to 2023.
Note: Starting in 2019, estimates for marriages now include same-sex married couples.

FIGURE 14.5 The median age of first marriage in the United States has gradually increased over time. (credit: modification of work "Figure MS-2: Median age at first marriage: 1890 to present" by U.S. Census Bureau/census.gov, Public Domain)

The gender gap in marital age has remained relatively constant, but the rising age is likely associated with other changing variables in adult development. These include an increase in the number of people who continue their education beyond high school (especially women and communities of color), an increase in the number of women in the workforce, and longer lifespans. Gender, education, race, and socioeconomic status also predict likelihood of marriage. College-educated women are more likely to marry than their non-college educated peers, and lower socioeconomic status is negatively correlated with likelihood of marriage. This trend is similar to that seen in Western European countries (Esping-Anderson, 2016; Jalovaara, 2002). By age forty years, about 25 percent of U.S. adults have never been married (compared to 6 percent in 1980) (Figure 14.6).



Note: White, Black and Asian adults include those who report being only one race and are not Hispanic. Hispanics are of any race. "Some college" includes those with an associate degree and those who attended college but did not obtain a degree.
Source: Pew Research Center (2023). Pew Research Center analysis of the 2021 American Community Survey (IPUMS).

FIGURE 14.6 About 25 percent of U.S. adults have not married by age forty years. This rate varies across demographic factors, such as education, ethnicity, and gender.[2] (data source: Pew Research Center; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The last thirty years have also seen important changes to marriage equality. In the 1990s, human rights advocates pushed for states to legalize what were called "civil unions" for same-sex couples. This separate-but-equal status attempted to provide same-sex couples with access to many of the legal rights of marriage, including tax, medical, and housing benefits, while reserving the term "marriage" for rites sanctioned by religious institutions, most of which did not recognize or condone same-sex marriage. This discriminatory practice was legitimized in 1996 when Congress passed the Defense of Marriage Act (DOMA) that defined *marriage* as a "legal union of one man and one woman as husband and wife" and the word *spouse* as "a person of the opposite sex who is a husband or wife" (Defense of Marriage Act, 1996).

In 2013, however, President Barack Obama responded to rising opposition to DOMA by declaring it unconstitutional under the Constitution's Equal Protection Clause. True reform came in the 2015 case of *Obergefell v. Hodges* when the U.S. Supreme Court voted 5–4 to federally protect same-sex marriage (refer to Figure 14.7). As of 2021, there were more than 710,000 married same-sex households in the United States (U.S. Census Bureau, 2021). These couples are more likely than their opposite-sex married counterparts to be young, well educated, and interracial.

2 According to the Pew Research Center analysis of the 2021 American Community Survey (IPUMS), "White, Black and Asian adults include those who report being only one race and are not Hispanic; Hispanics are of any race; 'some college' includes those with an associate degree and those who attended college but did not obtain a degree."

FIGURE 14.7 Same-sex marriage became a federally protected right in 2015. As of 2021, there were more than 710,000 married same-sex couples and over one million total same-sex households in the United States (U.S. Census Bureau, 2021). (credit: modification of work "Wedding at City Hall, Dec. 9, 2012" by Seattle Municipal Archives/Flickr, CC BY 2.0)

While there has been much progress worldwide to increase marriage equality, only thirty-six countries (fewer than 20 percent of all countries across the globe) have legalized same-sex marriage as of 2024 (refer to Figure 14.8).

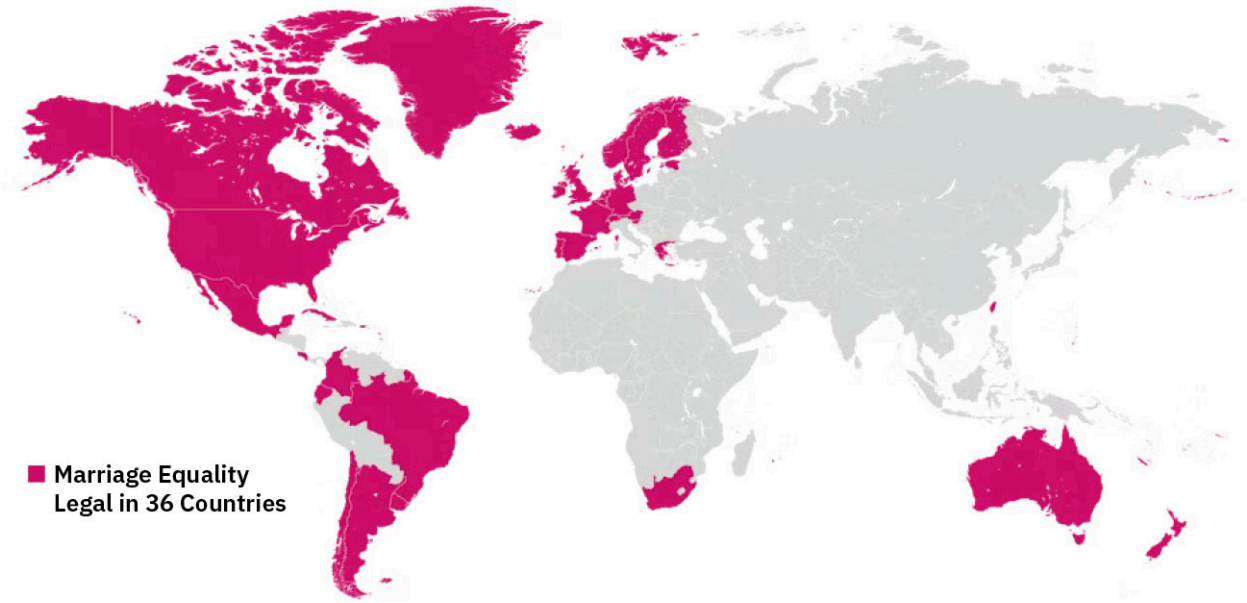


FIGURE 14.8 This map shows countries with laws protecting marriage equality as of 2024. (Human Rights Campaign, 2024). (credit: "Marriage Equality Around the World" by Human Rights Campaign/HRC, Public Domain)

LINK TO LEARNING

In February 2024, Greece legalized same-sex marriage. Greece is the only Orthodox Christian country in the

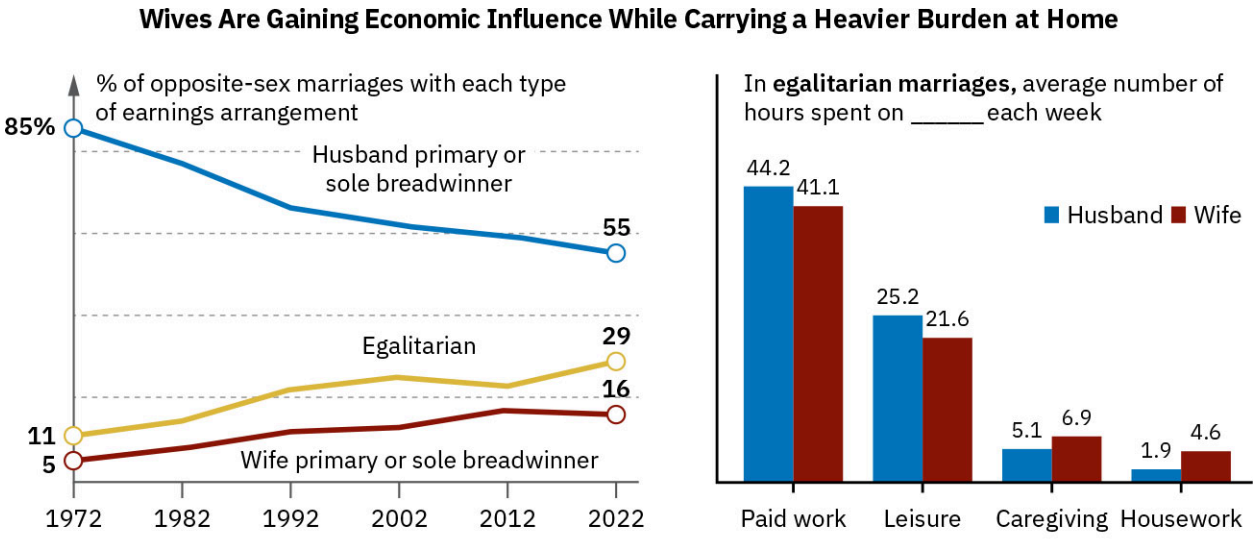
world to do so. Learn more about the vote and public reaction to Greece legalizing same-sex marriage (https://openstax.org/r/104GreecSameSex) in this report from DW News.

Division of Labor in Marital Relationships

The dynamics of marital relationships may vary depending on the values, preferences, personality, gender, age, and generational cohort of the partners. Most research on marital dynamics is based on heterosexual couples, and scholars have identified the need for more research on same-sex marriages, as preliminary research suggests that the gendered marital dynamics of same-sex midlife spouses can differ from that of heterosexual couples (Umberson et al., 2018).

In heterosexual marriages, researchers have identified two general approaches to balancing the roles and responsibilities of a marital partnership. Some heterosexual marriages operate within the framework of traditional or conventional gender roles, in which women are more likely to handle domestic work within the home, such as household chores and childcare responsibilities. Men are more likely to provide and control household income as the primary or only breadwinner and person in charge of financial planning and decisions. Although this provides a ready-made and clear division of labor in the household, the arrangement can also limit flexibility and the choices each individual can make, and it can inhibit the need for generative change and growth during middle adulthood, leading to stagnation and dissatisfaction (Saeedi et al., 2024).

In contrast, in an **egalitarian marriage**, responsibilities are shared equally between partners, and roles are not prescribed according to traditional gender role stereotypes. While this approach theoretically allows for more individual flexibility and shared work, research indicates that when both partners work outside the home, in heterosexual marriages women still complete most household and childcare responsibilities, even when the income from their job makes them a joint or primary breadwinner for their family (Carlson et al., 2016). Recent data on heterosexual marriages show that men are the primary or sole breadwinners in just over half of current heterosexual marriages, while 45 percent of women with opposite-sex spouses are the joint or primary breadwinners. And even though most U.S. adults believe that children are better off when working parents share equally the professional and domestic responsibilities of the household (Fry et al., 2023). Research indicates that when couple's equally share housework, they are more likely to have better relationship quality (Carlson, 2022). Studies consistently find that even in egalitarian dual-earner marriages, women spend significantly more time engaged in childcare and housework than men (Fry et al., 2023) (Figure 14.9). However, whether this unequal delegation of domestic responsibilities produces dissatisfaction appears to depend on the spouses' beliefs regarding gender roles and how those roles and tasks are discussed among spouses (Magnusson & Marecek, 2012)



Source: Fry, R., et al. (2023). In a growing share of U.S. marriages, husbands and wives earn about the same. Pew Research Center analysis of Current Population Survey Annual Social and Economic Supplement (ASEC) and American Time Use Survey, 2016–2021 merged (IPUMS).

FIGURE 14.9 Despite an increase in egalitarian marriages and female breadwinners in U.S. opposite-sex marriages, wives typically still have less leisure time and do more housework and childcare than their husbands. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Predictors of Marital Satisfaction

So, what is the key to a happy marriage? Many insights into that question have come from a cozy living room that originated on the campus of the University of Washington and is now housed within The Gottman Institute in Seattle, Washington. Illuminated by daylight streaming in through a big picture window, the room is furnished with a comfortable couch, accent tables, a colorful area rug, and a high-tech surveillance system monitored by psychologists to record every detail of the room's occupants, from conversations and facial expressions to heart rate and skin conductivity.

The room is known as the Gottman Love Lab, and for decades, clinical psychologist John Gottman and colleagues have been collecting observational and self-report data from couples to learn what makes love and marriage successful (Figure 14.10). Longitudinal follow-ups of thousands of couples who have participated in Love Lab research studies have identified several reliable predictors of marital satisfaction. In fact, Gottman claims to predict with over 90% accuracy whether couples will remain together (Gottman & Levenson, 2002).

FIGURE 14.10 The Gottman Institute "Love Lab" provides a comfortable environment for studying what makes relationships work. (credit: "Gottman Love Lab"/The Gottman Institute; used with permission)

At the core of the Love Lab findings is the way a couple responds to conflict (rather than avoiding it). Conflict is inevitable in any marriage and often revolves around recurring issues that stem from personality differences (Gottman, 1994a). Therefore, Gottman proposes that a couple's ability to maintain healthy communication despite conflict is one of the most powerful predictors of marital satisfaction and stability. A couple's ability to maintain positive affect during and after conflict is key (Driver & Gottman, 2004). In fact, Gottman cites the "5-to-one ratio": those couples who make at least five positive comments for every one negative comment are most successful in the long run. Not surprisingly, couples who show sustained cycles of negativity are more likely to be dissatisfied with their relationships (Woodin, 2011).

Research found that a couple's ability to exhibit psychological soothing is crucial to resolving and recovering from conflict (Figure 14.11). Psychological soothing can include expressions of empathy, use of humor, willingness to accept influence (this is especially true for men), and repair behaviors (which can be as simple as apologizing or even offering your partner a cup of coffee) (Gottman et al., 1998; Levenson & Ruef, 1992; Lewis et al., 2015). These behaviors are perhaps best summed up by Gottman's report of one man's comment following a particularly heated argument with his partner: "Well, now that we've completely destroyed each other's personalities, do you want a piece of cheesecake?" (Perel, 2023).

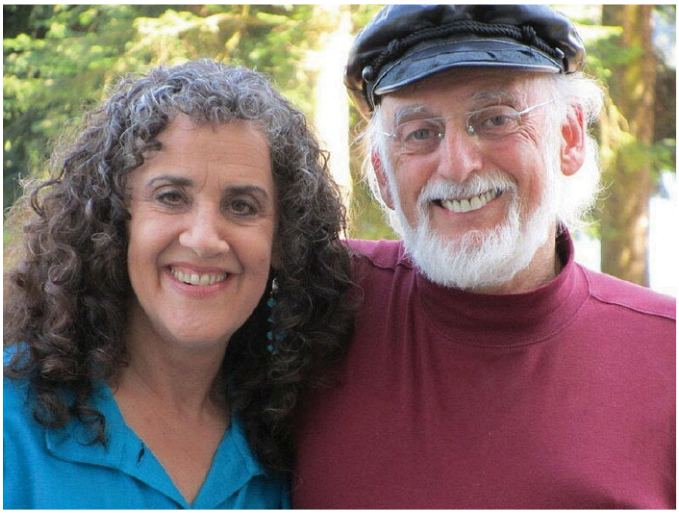


FIGURE 14.11 John and Julie Gottman have spent decades studying what makes relationships work. (credit: "Dr. John Gottman" by "Tkunovsky"/Wikimedia Commons, CC0 1.0)

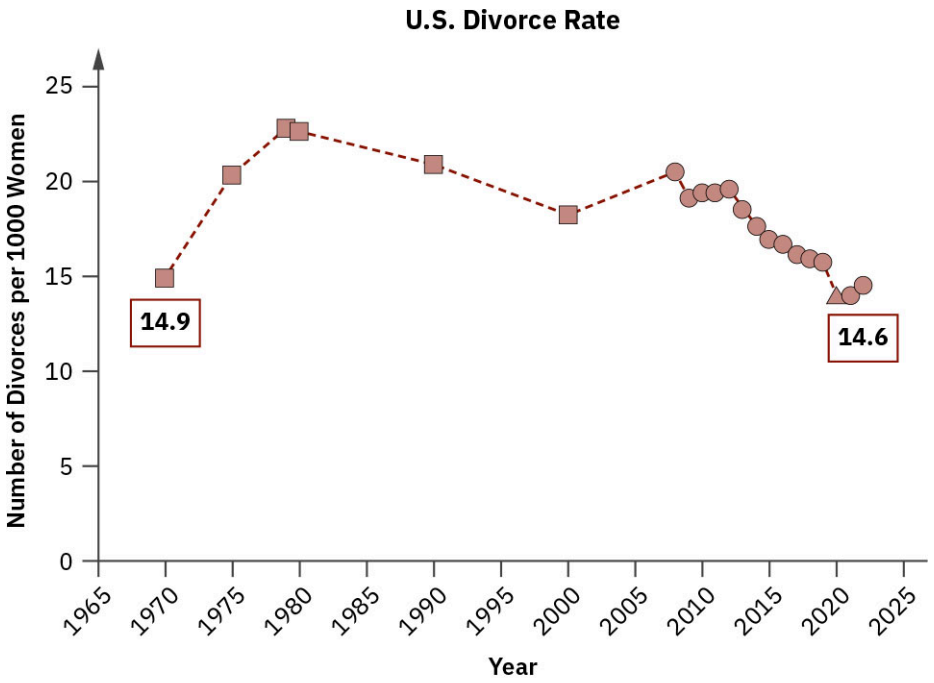
Gottman and other researchers assert that spouses who are also friends have the most solid foundation from which to build, repair, and maintain a healthy marriage. Marriage counseling approaches that encourage couples to enhance their friendship are predictive of an increase in marital satisfaction one year later (Babcock et al., 2013). However, recent research has cautioned against a one-size-fits-all, quick-fix view on relationship interventions and therapy, because individual and group differences create complex variations in relationship dynamics. The enduring benefits of marital therapy may depend on the age of the couple and environment in which they live, and while marital counseling may successfully reduce negative communication, it does not consistently increase long-term positive communication or relationship satisfaction (Karney & Bradbury, 2020).

There may also be gender or sexual identity differences in marital functioning. Compared to men, women are more likely to value the role of intimacy in regard to marital satisfaction. Women report slightly less marital satisfaction than men, even when participating in marital counseling, and are somewhat more likely to display a mix of hostility, distress, and intimacy during arguments, whereas men prefer to either withdraw or take a problem-solving approach to resolve arguments (Jackson et al., 2014; Woodin, 2011; Yoo & Joo, 2022). Also, the role of sexual identity in relationship functioning has not yet been adequately explored by current research, particularly within marriages. A study of Italian couples found that same-sex couples reported higher relationship satisfaction than heterosexual couples (Antonelli et al., 2014). Similarly, a longitudinal research study examining the effectiveness of a marital counseling approach guided by principles established at the Gottman Love Lab found that the therapy was actually more effective for same-sex couples than heterosexual couples (Garanzini et al., 2017). This difference between same- and different-sex couples in relationship satisfaction and repair may be related to a previous finding by the Gottman lab, which revealed that same-sex couples are less likely to respond to disagreements with controlling behaviors and more likely to use humor. As a result, same-sex couples experience fewer signs of physiological arousal during an argument, such as increased heart rate, and are better able to employ psychological soothing (Gottman et al., 2003). While psychologists seeking to better understand and support the experiences of those in the LGBTQ+ community say that "available data suggest that many factors that predict relationship satisfaction and disruption for heterosexual couples also do so for same sex couples," more updated research is needed (Farr & Goldberg, 2018, p. 151).

Divorce

Just as many factors influence whether and how adults form and maintain marital relationships, the experience of ending a marriage can be equally complex. You may have heard people discuss the rising rate of

divorce in the United States. But while the United States does have a higher divorce rate than most other countries (thirteenth highest in the world) (United Nations Department of Economic and Social Affairs, 2022), that rate has declined since peaking in 1979 at 22.6 divorces per 1,000 marriages (Figure 14.12). In fact, data from the U.S. Census Bureau's American Community Survey indicate that divorce is at an all-time low of about 14 divorces per 1,000 marriages (Loo, 2023), though rates are higher among U.S. adults who are Black, have lower incomes, and are less educated (Mayol-García et al., 2021). Research from Sweden, where same-sex marriage has been legally protected since 2009, finds that same-sex marriages between women have a somewhat higher rate of divorce than heterosexual marriages and same-sex marriages between men (Kolk & Anderson, 2020).



Source: Loo, J. (2023). Divorce rate in the U.S.: Geographic variation, 2022. *Family Profiles,* FP-23-24. National Center for Family & Marriage Research.

FIGURE 14.12 The U.S. divorce rate (reported as number of divorces per 1,000 women) rose steadily from 1965 until 1979, but has gradually decreased in the last forty years. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Laws related to divorce have clear impacts on the likelihood that adults in unhappy marriages will get divorced. The no-fault divorce laws enacted in the 1970s allowed couples to cite "irreconcilable differences" as grounds for divorce, as opposed to identifying a specific marital transgressions such as adultery or violence. This change is associated with the corresponding rise in divorce rate at that time. In contrast, the legal system in Sri Lanka only accepts fault-based divorce requests and has one of the lowest divorce rates in the world.

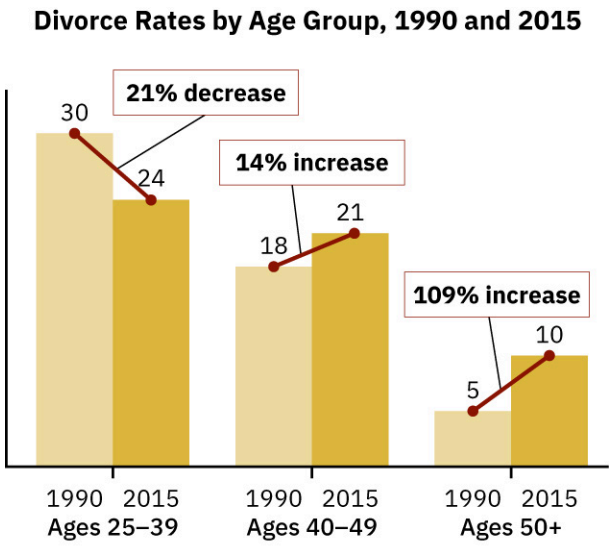
Religiosity is also negatively correlated with divorce. Those without religious affiliation are more likely to get divorced, and those with high religious service attendance and conservative religious values are less likely to get divorced (Pew Research Center, 2014). The religion with the lowest divorce rate is Hinduism (Bieber & Ramirez, 2024).

The average length of a first marriage that ends in divorce is approximately eight years (U.S. Census Bureau, 2021). The top reasons for divorce cited by divorced adults over age fifty years are listed in Table 14.1.

Men	Women
1. We grew apart	1. Spouse cheated
2. Spouse cheated	2. Spouse's use of pornography, alcohol, or drugs
3. Financial difficulties/disagreements	3. Spouse was verbally or emotionally abusive
4. Spouse's mental health	4. We grew apart
5. Problems related to the children	5. Spouse's mental health

TABLE 14.1 Why Did You Get Divorced? (ranked by order of mention) (source: Crowley (2018)

The average age of those divorcing is forty-six years for men and forty-four years for women. Divorce rates among those aged fifty years and older have doubled since 1990 (Allred, 2019) (Figure 14.13). Researchers studying the trend of divorce after age fifty years, called **gray divorce**, point to three likely reasons (Crowley, 2018). First, the purpose of marriage is increasingly conceptualized as a source of happiness. Therefore, when a marriage is negatively affecting a person's happiness, they are less likely to remain married for other reasons (such as financial stability, children, or reputation). Second, the increase in life expectancy changes the consequences of marriage. As anthropologist Margaret Mead is quoted as saying, "It used to be when we said 'til death do us part,' death parted us pretty soon. That's why marriages used to last forever. Everybody was dead" (Krebs, 1977, pg 41). With increasing numbers of adults living into their eighties, nineties, and even hundreds, not only is marriage a much longer commitment, but the possibility of living a full life after a divorce in middle adulthood is fairly high. The third reason cited is the introduction of no-fault divorce laws, which would not have been available earlier in the marriages of some older adults.



Source: Stepler, R. (2017). Led by Baby Boomers, divorce rates climb for America's 50+ population. Pew Research Center.

FIGURE 14.13 In contrast to the overall divorce rate in the United States, the gray divorce rate has increased in the last thirty years. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Divorce Processes

Related to the rise of no-fault divorce in the United States and diversification of family and household units, legal scholars and psychologists have advocated for a rejection of the traditional adversarial divorce system in

favor of a mediational approach. Within the adversarial divorce approach, one or both spouses have already decided to end their marriage, and the legal system is used to present and dispute the spouses' opposing views to determine what rights, assets, and support each person will be awarded (i.e., property, spousal or child support, child custody and visitation rights). The adversarial approach employs an argumentative framework that makes reconciliation unlikely. This approach can create drawn-out and expensive proceedings that can cause further financial and emotional damage to the couple (Center for Divorce Mediation, 2024).

When children are involved, an acrimonious divorce can increase their risk of negative emotional, behavioral, and psychological outcomes, such as feelings of humiliation and loneliness, aggressive behavior, poor academic performance, and anxiety (Sarmadi & Kholdabakhshi-Koolaee, 2023). An adversarial divorce can also undermine children's relationship with their parents during and after the divorce (Kabyn, 2023). The competitive win-lose orientation of an adversarial approach to custodial arrangements and child support can also increase the risk of parental estrangement from their children and nonpayment of support (Murphy & Singer, 2015).

Instead, lawyers and psychologists have advocated for a mediational approach to divorce. This framework employs the assistance of either or both legal and counseling professionals to help the couple collaboratively discuss the state of the marriage and available options that will best serve all involved (Figure 14.14). This process does not require divorce papers to be filed before beginning, which can keep the door open for possible reconciliation. Mediational approaches also tend to be less upsetting, quicker, and less costly (Center for Divorce Mediation, 2024). Mediational approaches to divorce can include the involvement of divorce counselors before, during, and following a divorce. Divorce counselors can assist with helping couples work through the complicated cognitive, psychological, and practical aspects of their separation. Within the cognitive dimension, divorce counseling focuses on improving clients' self-efficacy in reaching desired goals improved couples' ability to make calm and thoughtful decisions during divorce mediation (Mahmoodabadi & Zarei, 2018). Within the psychological dimension, divorce counselors can help adults and children to develop effective communication skills, manage stress, and cope with feelings of loss or grief in response to the end of a marriage and preexisting family structure. Divorce counselors can also act as an unbiased third party to assist in practical matters, such as planning how to co-parent following a separation (Birch, 2023). Parents who employ mediational approaches during a divorce report higher satisfaction with custody agreements than those who do not (World Metrics, 2024).

FIGURE 14.14 Mediational approaches to divorce can include the involvement of divorce counselors before, during, and following a divorce. (credit: "Office meeting" by MadFishDigital (http://www.madfishdigital.com/ccimages)/Flickr, CC BY 2.0)

Outcomes of Divorce

Divorce can take a financial, social, and psychological toll. The median legal cost associated with the divorce process is $7,000, and those that go to trial are significantly more expensive than uncontested divorces (Crail &

Ramirez, 2024). In the long term, women in heterosexual marriages pay a steeper financial penalty following divorce. In addition to facing an average 45 percent decline in standard of living following a gray divorce (compared to 21 percent for men) (Lin & Brown, 2021), women are also at greater risk of losing more assets, health benefits, and retirement savings than men (Crowley, 2018). While the number of shared-custody arrangements has increased in the last several decades, most children of different-gender parents still end up living primarily with their mothers following a divorce, and most custodial parents do not receive the full amount of the child support from the other parent (Meyer et al., 2022; Eser, 2024).

Divorce can also result in feelings of hopelessness, low self-esteem, loneliness, and alienation (Sarmadi & Kholdabakhshi-Koolaee, 2023). Evidence suggests that in marriages between people of different genders, older men may pay a greater social and psychological toll than women, due to their reliance on the social support network and housework maintained by their spouses. In the years immediately following a divorce, men experience greater initial declines in life satisfaction and mental health compared to women (Leopold, 2018).

However, divorce can have positive outcomes as well. Adult women have been found to exhibit an increase in gregariousness, activity, and positive emotion in the six years following their divorce (Costa et al., 2000). Negative cognitive outcomes of divorce are lower for adults in middle adulthood compared to younger adulthood (Zhang et al., 2022). In the long term, most individuals can recover from the initial negative impacts of divorce (Leopold, 2018) and go on to lead satisfied and fulfilling lives, describing themselves as happy and independent (Crowley, 2019) and optimistic about new roles (Sakraida, 2005).

As you might have noticed in Table 14.1, in a 2018 study, the third most often cited reason women gave for divorcing men was physical or verbal abuse (Crowley, 2018). Domestic abuse is more common than many think. Twenty percent of marriages experience physical abuse (slapping, shoving, hitting, or other assault) and emotional abuse (threats and humiliating or controlling behavior) (American Association for Marriage and Family Therapy, 2023). Leaving an abusive relationship often requires several attempts, as the abuse survivor must often overcome many obstacles, such as threats to one's safety from the abuser, low self-esteem, and lack of resources. In the immediate aftermath of leaving an abusive relationship, many adults grapple with symptoms of post-traumatic stress disorder. However, over the course of two- and three-year follow-ups, trauma symptoms usually decline, and perceived quality of life increases (Anderson & Saunders, 2003; Blasco-Ros et al., 2010; Flasch et al., 2015).

LINK TO LEARNING

If you or someone you know is experiencing domestic violence, reach out to the National Domestic Violence Hotline (https://openstax.org/r/104DVHotline) for help. Call 1-800-799-SAFE, text "START" to 88788, or chat through their website to receive confidential support.

Dating and Remarriage

When seeking out romantic relationships in middle adulthood, men look for commitment, while women desire companionship without the demands of caregiving. Today's middle-aged adults find themselves needing to adapt to a dating landscape that includes new challenges, such as smaller social networks with fewer eligible partners (McWilliams & Barrett, 2014). These adults are faced with adjusting to modern ways of meeting people, such as online dating. In fact, several online dating sites specifically marketed to adults aged fifty years and older have emerged to meet the demand.

Studies of online dating in middle and older adulthood find that men prefer younger romantic partners, screen for physical attractiveness, and seek a partner who can provide emotional support. Women prioritize intelligence, honesty, companionship, and socioeconomic status in their online dating matches (Hitsch et al., 2010; McWilliams & Barrett, 2014; Watson & Stelle, 2021). Both men and women in middle adulthood are more likely to post dating profiles that emphasize youthfulness, with women more focused on how they look and men focused more on conveying financial and professional success (McWilliams & Barrett, 2014).

Almost 25 percent of currently married couples include at least one person who has been married before (Mayol-García et al., 2021); however, second and third marriages have much higher divorce rates than first marriages, around 70 percent (Bieber & Ramirez, 2024; Brooks, 2023). Individuals who are remarrying are likely starting their relationship under more complex circumstances than in their first marriage. They may still be recovering from the emotional and financial impact of divorce, while possibly managing the challenge of blending families. Seventy percent of children with divorced parents live under shared-custody agreements (Hemez & Washington, 2021).

References

Allred, C. (2019). *Gray divorce rate in the U.S.: Geographic variation.* (Family Profiles, FP-19-20). National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-19-20

American Association for Marriage and Family Therapy. (2023). *Domestic violence.* American Association for Marriage and Family Therapy. https://www.aamft.org/Consumer_Updates/Domestic_Violence.aspx#:~:text=Domestic%20violence%20is%20very%20common,behavior—is%20even%20more%20common

Anderson, D. K., & Saunders, D. G. (2003). Leaving an abusive partner: An empirical review of predictors, the process of leaving, and psychological well-being. Trauma, Violence & Abuse, 4(2), 163–191. https://doi.org/10.1177/1524838002250769

Antonelli, P., Dèttore, D., Lasagni, I., Snyder, D. K., & Balderrama-Durbin, C. (2014). Gay and lesbian couples in Italy: Comparisons with heterosexual couples. Family Process, 53(4), 702–716. https://doi.org/10.1111/famp.12078

Babcock, J. C., Gottman, J. M., Ryan, K. D., & Gottman, J. S. (2013). A component analysis of a brief psycho-educational couples' workshop: One-year follow-up results. Journal of Family Therapy, 35(3), 252–280. https://doi.org/10.1111/1467-6427.12017

Baron, C. E., Smith, T. W., Uchino, B. N., Baucom, B. R., & Birmingham, W. C. (2016). Getting along and getting ahead: Affiliation and dominance predict ambulatory blood pressure. *Health Psychology, 35*, 253–261. https://doi.org/10.1037/hea0000290

Bieber, C., & Ramirez, A. (2024, May 30). *Revealing divorce statistics in 2024.* Forbes. https://www.forbes.com/advisor/legal/divorce/divorce-statistics

Birch, J. (2023, April 20). *Counseling families to facilitate a healthier divorce.* National Board for Certified Counselors. https://www.nbcc.org/resources/nccs/newsletter/counseling-families-to-facilitate-a-healthier-divorce#:~:text=Anyone%20can%20benefit%20from%20divorce,%2C%20and%20co%2Dparenting%20planning

Blasco-Ros, C., Sánchez-Lorente, S., & Martinez, M. (2010). Recovery from depressive symptoms, state anxiety and post-traumatic stress disorder in women exposed to physical and psychological, but not to psychological intimate partner violence alone: A longitudinal study. *BMC Psychiatry*, *10*, 1–12. https://doi.org/10.1186%2F1471-244X-10-98

Bost, K. K., Wiley, A. R., Fiese, B., Hammons, A., & McBride, B. (2014). Associations between adult attachment style, emotion regulation, and preschool children's food consumption. *Journal of Developmental and Behavioral Pediatrics, 35*(1), 50–61. https://doi.org/10.1097/01.DBP.0000439103.29889.18

Brooks, R. (2023, April 11). Saying 'I do' for the second time? U.S. News and World Report. https://money.usnews.com/money/personal-finance/articles/saying-i-do-for-the-second-time

Research indicates that when couple's equally share housework, they are more likely to have better relationship quality (Carlson, 2022).

Carlson, D. L., Miller, A. J., Sassler, S., & Hanson, S. (2016). The gendered division of housework and couples' sexual relationships: A reexamination. Journal of Marriage and Family, 78(4), 975–995. https://doi.org/10.1111/jomf.12313

Carpenter, B. D. (2001). Attachment bonds between adult daughters and their older mothers: Associations with contemporary caregiving, *The Journals of Gerontology: Series B*, *56* (5), 257–266. https://doi.org/10.1093/geronb/56.5.P257

Center for Divorce Mediation. (2024). *Comparison of adversarial and mediation process.* https://center-divorce-mediation.com/comparison-of-adversarial-and-mediation-process/

Cicirelli, V. G. (1993). Attachment and obligation as daughters' motives for caregiving behavior and subsequent effect on subjective burden. Psychology and Aging, 8(2), 144–155. https://doi.org/10.1037/0882-7974.8.2.144

Cohen, S. (2004). Social relationships and health. *American Psychologist, 59*, 676–684. https://doi.org/10.1037/0003-066x.59.8.676

Collins, N. L., & Feeney, B. C. (2004). Working models of attachment shape perceptions of social support: Evidence from experimental and observational studies. Journal of Personality and Social Psychology, 87(3), 363–383. https://doi.org/10.1037/0022-3514.87.3.363

Costa, P. T., Jr., Herbst, J. H., McCrae, R. R., & Siegler, I. C. (2000). Personality at midlife: Stability, intrinsic maturation, and response to life events. Assessment, 7(4), 365–378. https://doi.org/10.1177/107319110000700405

Crail, C., & Ramirez, A. (2024). How much does a divorce cost in 2024? Forbes. https://www.forbes.com/advisor/legal/divorce/how-much-does-divorce-cost/

Crowley, J. E. (2018). Gray divorce: What we lose and gain from mid-life splits. University of California Press.

Crowley, J. E. (2019). Does everything fall apart? Life assessments following a gray divorce. Journal of Family Issues, 40(11), 1438–1461. https://doi.org/10.1177/0192513X19839735

Curtin, S. C., & Tejada-Vera, B. (2019, October 10). Mortality among adults aged 25 and over by marital status: United States 2010–2017. Centers for Disease Control and Prevention. https://www.cdc.gov/nchs/data/hestat/mortality/mortality_marital_status_10_17.htm#REF3

Defense of Marriage Act, H.R. 3396, 104th Cong. (1996). https://www.govinfo.gov

Driver, J. L., & Gottman, J. M. (2004). Daily marital interactions and positive affect during marital conflict among newlywed couples. Family Process, 43(3), 301–314. https://doi.org/10.1111/j.1545-5300.2004.00024.x

Ehrlich, K. B., & Cassidy, J. (2019). Attachment and physical health: Introduction to the special issue. Attachment & Human Development, 21(1), 1–4. https://doi.org/10.1080/14616734.2018.1541512

Eser, A. (2024). Eye-opening divorce custody statistics revealed in recent study report. *World Metrics*. (2024, July 23). https://worldmetrics.org/divorce-custody-statistics/

Esping-Andersen, G. (2016). *Families in the 21st century* (p. 113). Stockholm: SNS förlag.

Farr, R. H., & Goldberg, A. E. (2018). Same-sex relationship dissolution and divorce: How will children be affected? In Abbie E. Goldberg, and Adam P. Romero (eds), *LGBTQ Divorce and Relationship Dissolution: Psychological and Legal Perspectives and Implications for Practice (online ed)*. Oxford Academic. https://doi.org/10.1093/med-psych/9780190635176.003.0009

Flasch, P., Murray, C. E., & Crowe, A. (2015). Overcoming abuse: A phenomenological investigation of the journey to recovery from past intimate partner violence. *Journal of Interpersonal Violence, 32*(22), 3373–3401. https://doi.org/10.1177/0886260515599161

Fraley, C. R. (2002). Attachment stability from infancy to adulthood: Meta-analysis and dynamic modeling of developmental mechanisms. *Personality and Social Psychology Review*, *6*(2), 123–151. https://doi.org/10.1207/S15327957PSPR0602_03

Fry, R., Aragao, C., Hurst, K., & Parker, K. (2023, April 13). *In a growing share of U.S. marriages, husbands and wives earn about the same.* Pew Research Center. https://www.pewresearch.org/social-trends/2023/04/13/in-a-growing-share-of-u-s-marriages-husbands-and-wives-earn-about-the-same/

Garanzini, S., Yee, A., Gottman, J., Gottman, J., Cole, C., Preciado, M., Jasculca, C. (2017). Results of Gottman method couples therapy with gay and lesbian couples. *Journal of Marital and Family Therapy*, 43, 674–684. https://doi.org/10.1111/jmft.12276

Gottman, J. M., Coan, J., Carrere, S., & Swanson, C. (1998). Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage and the Family, 60*(1), 5–22. https://doi.org/10.2307/353438

Gottman, J. M. (1994). *Why marriages succeed or fail.* Fireside.

Gottman, J. M., & Levenson, R. W. (2002). A two-factor model for predicting when a couple will divorce: Exploratory analyses using 14-year longitudinal data. Family Processes Journal, 41(1), 83–96. https://doi.org/10.1111/j.1545-5300.2002.40102000083.x

Gottman, J. M., Levenson, R. W., Swanson, C., Swanson, K., Tyson, R., & Yoshimoto, D. (2003). Observing gay, lesbian and heterosexual couples' relationships: Mathematical modeling of conflict interaction. *Journal of Homosexuality, 45*(1), 65–91. https://doi.org/10.1300/J082v45n01_04

Gouin, J.-P., & MacNeil, S. (2019). Attachment style and changes in systemic inflammation following migration to a new country among international students. Attachment & Human Development, 21(1), 38–56. https://doi.org/10.1080/14616734.2018.1541515

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52*(3), 511–24. https://doi.org/10.1037/0022-3514.52.3.511

Hemez, P., & Washington, C. (2021, April 12). *Percentage and number of children living with two parents has dropped since 1968.* U.S. Census Bureau. https://www.census.gov/library/stories/2021/04/number-of-children-living-only-with-their-mothers-has-doubled-in-past-50-years.html

Hitsch, G. J., Hortaçsu, A., & Ariely, D. (2010). What makes you click? Mate preference in online dating. *Quantitative Marketing and Economics*, *8*, 393–427. https://doi.org/10.1007/s11129-010-9088-6

Human Rights Campaign. (2024). *Marriage equality around the world*. https://www.hrc.org/resources/marriage-equality-around-the-world
Jace, C. E., & Makridis, C. A. (2021). Does marriage protect mental health? Evidence from the COVID-19 pandemic. Social Science Quarterly, 102(6), 2499–2515. https://doi.org/10.1111/ssqu.13063
Jackson, J. B., Miller, R. B., Oka, M., & Henry, R. G. (2014). Gender differences in marital satisfaction: A meta-analysis. *Journal of Marriage and Family*, *76*(1), 1052–129. https://doi.org/10.1111/jomf.12077
Jalovaara, M. (2002). Socioeconomic differentials in divorce risk by duration of marriage. *Demographic Research*, *7*, 537–564. https://doi.org/10.4054/DemRes.2002.7.16
Kabyn, A. (2023). The psychological consequences of children of parental divorce. *Canadian Journal of Family and Youth, 15*(2), 120–125. https://doi.org/10.29173/cjfy29923
Karantzas, G. C., Evans, L., & Foddy, M. (2010). The role of attachment in current and future parent caregiving. *The Journals of Gerontology: Series B*, *65B* (5), 573–580. https://doi.org/10.1093/geronb/gbq047
Karney, B. R. and Bradbury, T.N. (2020). Research on marital satisfaction and stability in the 2010s: Challenging conventional wisdom. *Journal of Marriage & Family, 82*, 100–116. https://doi.org/10.1111/jomf.12635
Kidd, T., Poole, L., Leigh, E., Ronaldson, A., Jahangiri, M., & Steptoe, A. (2014). Attachment anxiety predicts IL-6 and length of hospital stay in coronary artery bypass graft surgery (CABG) patients. *Journal of Psychosomatic Research, 77* (2), 155–157. https://doi.org/10.1016/j.jpsychores.2014.06.002
Kolk, M., & Andersson, G. (2020). Two decades of same-sex marriage in Sweden: A demographic account of developments in marriage, childbearing, and divorce. *Demography, 57* (1): 147–169. https://doi.org/10.1007/s13524-019-00847-6
Krebs, A. (1977, November 23). Notes on people. *The New York Times*. https://www.nytimes.com/1977/11/23/archives/notes-on-people.html
Leopold, T. (2018). Gender differences in the consequences of divorce: A study of multiple outcomes. *Demography*, *55*(3), 769–797. http://www.jstor.org/stable/45048008
Levenson, R. W., & Ruef, A. M. (1992). Empathy: A physiological substrate. *Journal of Personality and Social Psychology*, *63*(2), 234–246. https://doi.org/10.1037/0022-3514.63.2.234
Lewis, J. T., Parra, G. R. and Cohen, R. (2015). Apologies in close relationships: A review of theory and research. *Journal of Family Theory and Review, 7*(1), 47–61. https://doi.org/10.1111/jftr.12060
Lin, I-F., & Brown, S. L. (2021). The economic consequences of gray divorce for women and men. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *76*(10), 2073–2085. https://doi.org/10.1093/geronb/gbaa157
Loo, J. (2023). *Divorce rate in the U.S.: Geographic variation, 2022*. (Family Profiles, FP-23-24). National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-23-24
Madey, S. F., & Rodgers, L. (2009). The effect of attachment and Sternberg's Triangular Theory of Love on relationship satisfaction. Individual Differences Research, 7(2), 76–84. https://psycnet.apa.org/record/2009-11953-002
Magnusson, E., & Marecek, J. (2012). *Gender and culture in psychology: Theories and practices*. Cambridge University Press.
Mahmoodabadi, Z. H., & Zarei, F. (2018). The effect of divorce counseling based on Gottman's approach on the self-efficacy in divorce management of couples applying for divorce. *Journal of Social Behavior and Community Health, 2* (2), 219–227. http://sbrh.ssu.ac.ir/article-1-73-en.html https://doi.org/10.18502/sbrh.v2i2.283
Mayol-García, Y. H., Gurrentz, B., & Kreider, R. M. (2021). Number, timing, and duration of marriages and divorces. *Current Population Reports*, 70–167, U.S. Census Bureau.
McWilliams, S., & Barrett, A. E. (2014). Online dating in middle and later life: Gendered expectations and experiences. *Journal of Family Issues*, *35*(3), 411–436. https://doi.org/10.1177/0192513X12468437
Messina, S., Reisz, S., Hazen, N., & Jacobvitz, D. (2019). Not just about food: Attachments representations and maternal feeding practices in infancy. Attachment & Human Development, 22(5), 514–533. https://doi.org/10.1080/14616734.2019.1600153
Meyer, D. R., Carlson, M. J., & Ul Alam, M. M. (2022). Increases in shared custody after divorce in the United States. *Demographic Research*, *46*, 1137–1162. https://doi.org/10.4054/DemRes.2022.46.38
Murphy, J. C., & Singer, J. B. (2015). Divorced from reality: Rethinking family dispute resolution. NYU Press.
Perel, E. (Host). (2023, April 11). *Repair with John and Julie Gottman* [Video podcast]. Facebook. https://www.facebook.com/esther.perel/videos/repair-with-john-and-julie-gottman/176409245261211/
Pérez-Aranda, G. I., Peralta-López, V., Estrada-Carmona, S., Reyes, L. G., & Tuz-Sierra, M. A. (2019). Attachment and adulthood in a sample of Southeastern Mexico. *Behavioral Sciences*, *9*(12), 134. https://doi.org/10.3390/bs9120134
Pew Research Center. (2014). *Religious landscape study*. https://www.pewresearch.org/religion/religious-landscape-study/marital-status#marital-status
Pinquart, M., Feußner, C., & Ahnert, L. (2012). Meta-analytic evidence for stability in attachments from infancy to early adulthood. *Attachment & Human Development*, *15*(2), 189–218. https://doi.org/10.1080/14616734.2013.746257
Robles, T. F., & Kiecolt-Glaser, J. K. (2003). The physiology of marriage: Pathways to health. *Physiology & Behavior*, *79*(3), 409–416. https://doi.org/10.1016/s0031-9384(03)00160-4
Saeedi, Z. (2024). Predicting Marital Satisfaction based on Attitudes Towards Gender Roles and Identity Styles in Couples. *Journal of Family Relations Studies*, *4*(14), 31–40. https://doi.org/10.22098/jfrs.2024.14297.
Sakraida, T. J. (2008). Common themes in the divorce transition experience of midlife women. *Journal of Divorce & Remarriage, 43*(1–2), 69–88. https://doi.org/10.1300/J087v43n01_04
Sarmadi, Y., & Khodabakhshi-Koolaee, A. (2023). Psychological and social consequences of divorce emphasis on children well-being: A systematic review. *Journal of Preventive Counselling, 4*(2), 1–34. https://doi.org/10.22098/jpc.2023.12578.1162
Simpson, J. A., Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety-provoking situation: The role of attachment styles. *Journal of Personality and Social Psychology, 62*(3), 434–446. https://doi.org/10.1037/0022-3514.62.3.434
Sorokowski, P., Sorokowska, A., Karwowski, M., Groyecka, A., Aavik, T., Akello, G., Alm, C., Amjad, N., Anjum, A., Asao, K., Atama, C. S., Atamtürk Duyar, D., Ayebare, R., Batres, C., Bendixen, M., Bensafia, A., Bizumic, B., Boussena, M., Buss, D. M., & Butovskaya, M. (2021). Universality of the Triangular Theory of Love: Adaptation and psychometric properties of the Triangular Love Scale in 25 countries. *Journal of Sex Research*, *58*(1), 106–115. https://doi.org/10.1080/00224499.2020.1787318
Sternberg, K. P. (2014). Psychology of love 101. Springer Publishing Company.
Sternberg, R. J. (1986). A triangular theory of love. Psychological Review, 93, 119–135. https://doi.org/10.1037/0033-295X.93.2.119
Sumter, S. R., Valkenburg, P. M., & Peter, J. (2013). Perceptions of love across the lifespan: Differences in passion, intimacy, and commitment. International Journal of Behavioral Development, 37(5), 417–427. https://doi.org/10.1177/0165025413492486
Umberson, D., Donnelly, R., & Pollitt, A. M. (2018). Marriage, social control, and health behavior: A dyadic analysis of same-sex and different-sex couples. Journal of Health and Social Behavior, 59(3), 429–446. https://doi.org/10.1177/0022146518790560
United Nations Department of Economic and Social Affairs. (2022). Demographic and social statistics. https://unstats.un.org/unsd/demographic-social/products/dyb/dyb_2022/
U.S. Census Bureau. (2021). Number, timing, and duration of marriages and divorces 2016. Washington, D.C. https://www.census.gov/content/dam/Census/library/publications/2021/demo/p70-167.pdf
van Ee, E., Jongmans, M. J., van der Aa, N., & Kleber, R. J. (2017). Attachment representation and sensitivity: The moderating role of posttraumatic stress disorder in a refugee sample. *Family Process, 56*(3), 781–792. https://doi.org/10.1111/famp.12228
Waters, T. E. A., Yang, R., Finet, C., Verhees, M. W. F. T., & Bosmans, G. (2022). An empirical test of prototype and revisionist models of attachment stability and change from middle childhood to adolescence: A 6-year longitudinal study. *Child Development*, 93, 225–236. https://doi.org/10.1111/cdev.13672
Watson, W., & Stelle, C. (2021). Love in cyberspace: Self presentation and partner seeking in online dating advertisements of older adults. *Journal of Family Issues*, *42*(10), 2438–2463. https://doi.org/10.1177/0192513X20982024
Woodin, E. M. (2011). A two-dimensional approach to relationship conflict: Meta-analytic findings. *Journal of Family Psychology, 25*(3), 325–335. https://doi.org/10.1037/a0023791
Yau, N. (n.d.). Divorce and occupation. FlowingData. https://flowingdata.com/2017/07/25/divorce-and-occupation/
Yoo, G., & Joo, S. (2022). Love for a marriage story: The association between love and marital satisfaction in middle adulthood. Journal of Child & Family Studies, 31(6), 1570–1581. https://doi.org/10.1007/s10826-021-02055-6
Zagorsky, J. L. (2005). Marriage and divorce's impact on wealth. *Journal of Sociology, 41*(4), 406–424. https://doi.org/10.1177/1440783305058478
Zhang, Z., Liu, H., & Zhang, Y. (2022). Marital loss and cognitive function: Does timing matter? *The Journals of Gerontology: Series B*, 77(10), 1916–1927, https://doi.org/10.1093/geronb/gbac069

14.3 Households and Parenting in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

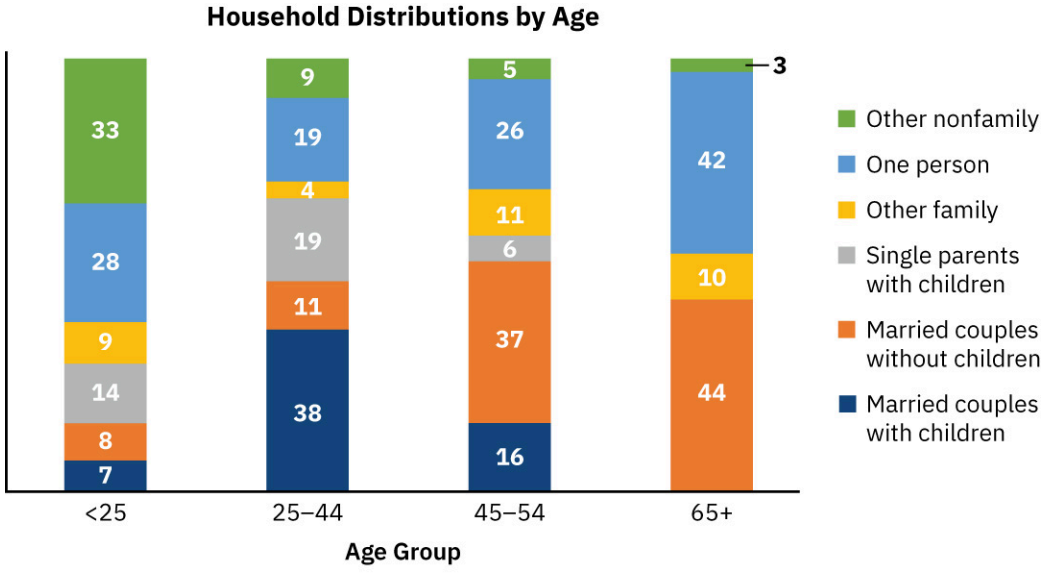
- Compare dynamics of different household structures
- Identify challenges facing parents during middle adulthood
- Describe influences on the family system

Maya is a single working mother raising two daughters. She is responsible for all the household bills, transportation, and childcare, and sometimes it feels impossible to do it all on her own. Maybe she could ask her mom to move in? It would be nice to have another adult to talk to and help with some of the childcare and housework. On the other hand, things already feel tight in the house. Would adding another person alleviate or increase the stress she already feels?

In midlife, the typical U.S. adult is employed and engaged in the care of their children, aging parents, or even grandchildren. These responsibilities result in rich and complex lives filled with changing roles and relationships that provide opportunities for generativity, but they also bring the potential for strain and stress. In this section, you'll consider the different ways that adults in midlife organize and manage this role expansion.

Types of Households

Modern U.S. households represent a rich variety of compositions, including (but not limited to) single adults, multigenerational families, blended families, same-sex parents with children, and empty-nest households (Figure 14.15). Those in middle adulthood are either neutral about this growing variety in households or perceive it as a good thing (Deja, 2020).



Sources: VanOrman, A., & Jacobsen, L. (2020). U.S. household composition shifts as the population grows older; more younger adults live with parents. *Population Bulletin, 74*(1). Population Reference Bureau.

US. Census Bureau. (2017). 2017 American Community Survey Public Use Microdata Sample (PUMS).

FIGURE 14.15 The constitution of American households changes across adulthood. Most adults between ages twenty-five and forty-four years are living with children, while most ages forty-five to sixty-four years are living alone or with another adult. Source: VanOrman & Jacobsen (2020). (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Single-Person Households

While most American adults share a household with others, 20 percent of American adults ages twenty-five to forty-four years and 26 percent of adults ages forty-five to sixty-four years live alone (VanOrman & Jacobsen, 2020) (Figure 14.16). This number has doubled since 1960, with other countries such as Canada, Japan, Germany, and France also demonstrating an increase. People in prosperous nations are more likely to live alone, particularly those who have the services and infrastructure to support solitary living (Ortiz-Ospina, 2024). In the United States, major cities, such as Los Angeles, New York City, or Washington, DC, report some of the highest numbers of young and middle-aged adults living in single-person households. In rural areas, there is a greater percentage of older adults living alone (Anderson et al., 2023). Adults who live alone may be never-married, divorced, or widowed, and are more likely to be homeowners (as opposed to renters) after age forty-five years (Masnick, 2015).

The experience of living alone seems to depend on the circumstances (Figure 14.16). Living alone does not equate to loneliness, especially for those who live alone by choice and continue to be socially engaged. However, adults who live alone as the result of separation, divorce, or widowhood are more likely to experience depression than those who live with others (Chen et al., 2022; Srivastava et al., 2021).

FIGURE 14.16 While most American adults share a household with others, 20 percent of American adults ages twenty-five to forty-four years and 26 percent of adults ages forty-five to sixty-four years live alone. (credit: "Woman sitting on sofa" by Michael Poley and AllGo/Unsplash, CC0 1.0)

In 2023 U.S. Surgeon General Vivek Murthy issued a report urging workplaces, health-care systems, governments, and communities to decrease the stigma of loneliness that can result from isolation (U.S. Surgeon General, 2023). Although those who live alone are at higher risk for loneliness and isolation, Murthy argued that household size is only one aspect of social connection, and that "this advisory calls attention to the critical role that social connection plays in individual and societal health and well-being and offers a framework for how we can all contribute to advancing social connection" (Figure 14.17).

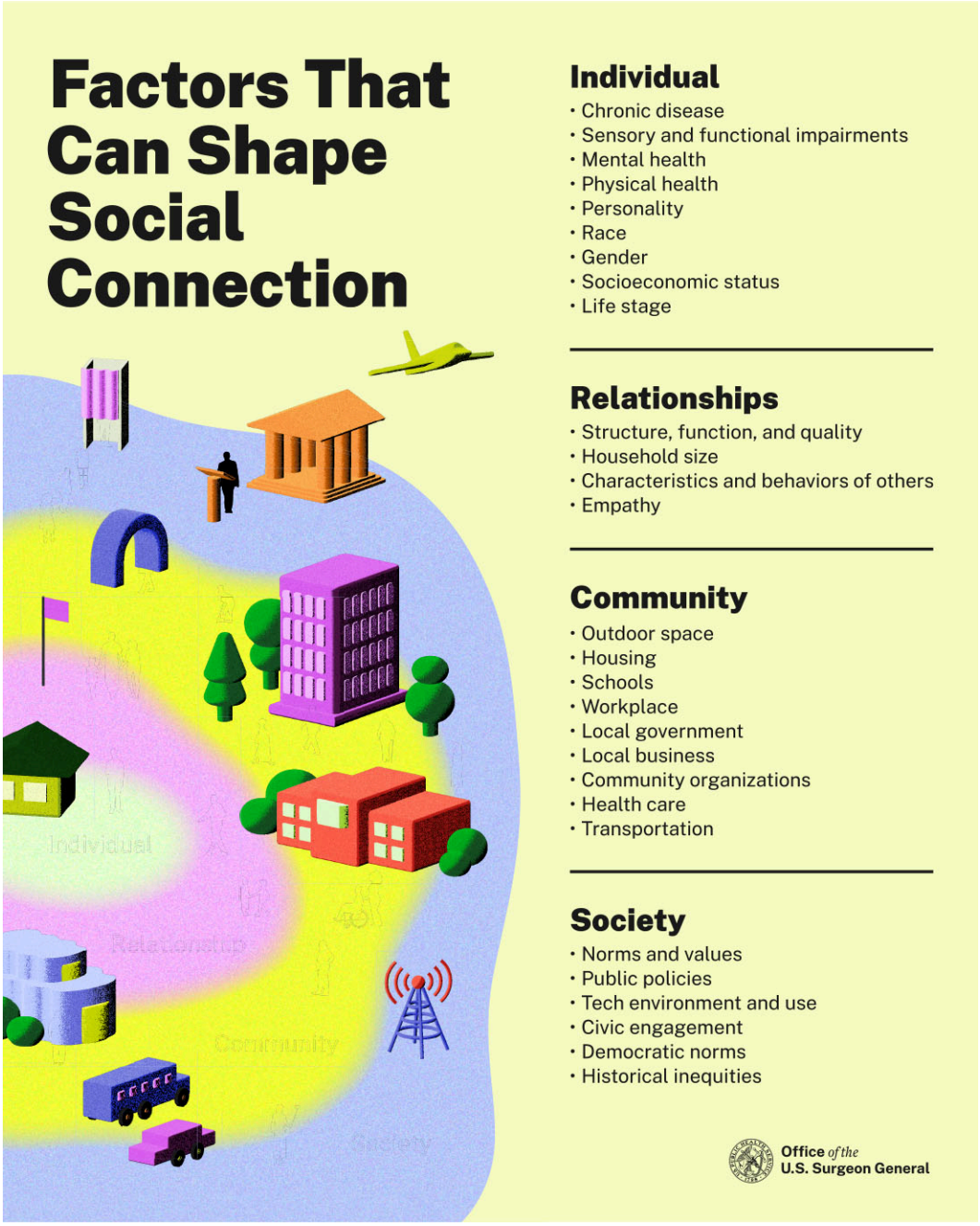


FIGURE 14.17 Household size is one of many factors that influence social connection. While adults living alone may be vulnerable to isolation and loneliness, individual, community, and societal factors can be just as influential in predicting the extent of a person's social connection. (credit: "Factors That Can Shape Social Connection" by Office of the U.S. Surgeon General/U.S. Department of Health and Human Services, Public Domain)

Social connection among adults can be formed through a **family of choice**, which includes individuals who are not necessarily related by marriage or biology but have formed a committed kin-like network to hold significant roles in each other's lives (Kim & Feyissa, 2021). While adults within these networks do not necessarily perceive their chosen families as replacing their biological families, families of choice often serve a needed role in complementing a family of origin (Hull & Ortyl, 2018), providing a supplemental source of love, support, and security (Kim & Feyissa, 2021). Families of choice may or may not live in the same household and can provide valuable social connection to adults who are experiencing any kind of separation or estrangement from their family of origin, including those who are immigrants or refugees, adults who have aged out of the

foster system, members of the LGBTQ+ community who feel misunderstood or rejected by their biological families, and divorced or never-married adults.

Single-Parent Households

About 30 percent of U.S. children live in single-parent households, and 80 percent of those families are headed by women (U.S. Census Bureau, 2024). Single mothers are more likely than married mothers to report symptoms of depression and anxiety (Liang et al., 2019), and they earn only about one-third as much as their married-parent counterparts (U.S. Census Bureau, 2021). Mothers with high incomes are more likely than mothers with low incomes to have opportunities for financial loans, places to live, childcare, and sources of emotional support (Harknett & Hartnett, 2011). This disparity likely occurs because the support networks of mothers with lower incomes tend to be similarly financially disadvantaged (Swartz, 2009).

Multifamily and Multigenerational Households

Some families may "double up" to create multifamily households for a variety of reasons, including reducing the strain of single parenting, saving on living expenses, and sharing childcare resources. When these households exist due to financial and housing instability, it may create overcrowded homes where available food or health care fails to meet the needs of all he occupants, taking a toll on family members' academic, physical, and behavioral adjustment (Gartland, 2022). However, for many families, multigenerational households can offer extra support that can actually improve cognitive, social and emotional support for all members of the household (Lee et al., 2021).

Multigenerational households are created when more than two adult generations of a family cohabitate. Occupants of these homes may include boomerang children (young adult children who return to the parent's home after a period of living independently) or aging parents who live with their adult children and grandchildren. A "skipped generation household" (when grandparents and their grandchildren younger than age twenty-five years live together without the parents) is also a type of multigenerational household (Figure 14.18).

FIGURE 14.18 The percentage of multigenerational U.S. households has nearly doubled in the last fifty years. (credit: modification of work "Thanksgiving 2009" by Neale Adams/Flickr, CC BY 2.0)

While most U.S. adults report that they value individual family homes for the independence and privacy they can afford (Bianchi et al., 2007), multigenerational homes can provide many useful emotional and logistic benefits. Most occupants of multigenerational households report that the arrangement is mostly or always rewarding or convenient, which is perhaps why the percentage of multigenerational households has nearly doubled in the last fifty years (Cohn et al., 2022). In the U.S., Asian, Hispanic, and Black people are more likely to occupy a multigenerational home, with finances, changes in relationship status, and caregiving cited as the most common reasons. However, regardless of logistic advantages, some families and cultures may be more likely to value strong ties to extended family (Keene & Batson, 2010).

Blended Households

Most divorced people remarry, and when one or more of these remarried adults have children from a previous relationship, the new marriage creates a blended or stepfamily household (although stepfamilies can also

consist of cohabitating but unmarried adult parents). The outcomes of stepfamily living vary substantially across individuals and families and depend on several variables, including the age of the children (Pew Research Center, 2011), psychological investment of the stepparents (Marsiglio, 2004), satisfaction of the newly married parents (Jensen & Lippold, 2018), and time since their divorce (Amato & Anthony, 2014). Family therapist Patricia Papernow (2017) identifies five common challenges facing stepfamilies: (1) insider-outsider views based on previous family alignments, (2) losses and changes faced by children, (3) disagreement between first-time family and stepfamily parents over parenting practices, (4) the challenge of building and negotiating a new family culture, and (5) the need to integrate ex-spouses and parents from previous relationships. Papernow asserts that these challenges can be successfully overcome when they are normalized and the parties are given adequate space and time to adjust, noting that become a stepfamily is not an event but an ongoing process.

LGBTQ+ Family Households

Fifteen percent of LGBTQ+ couples have children (Figure 14.19). Women in same-sex relationships are more likely to be parents than men. U.S. federal law allows same-sex couples to adopt, but foreign and even state adoption laws may impose guidelines that make it more difficult for them to do so. Despite these barriers, same-sex couples are more likely than opposite-sex couples to foster or adopt. In fact, more than 20 percent of same-sex families with children have adopted children (Taylor, 2020).

FIGURE 14.19 Fifteen percent of same-sex couples have children. (credit: "Fathers & Daughter at Capital Pride Festival 11 June 2006" by Elvert Barnes/Wikimedia Commons, CC BY 2.0)

Many same-sex families also include stepchildren from previous heterosexual relationships (Taylor, 2020). Others choose to conceive children through medical reproductive assistance, such as surrogacy, intrauterine insemination, and in vitro fertilization (Johns Hopkins Medicine, 2023). Likely because of the increased barriers and discrimination encountered by same-sex parents, they experience significantly more stress than their same-sex counterparts (Bos et al., 2016). These negative impacts are reduced in communities where there is more support for LGBTQ+ individuals (Lick et al., 2012). However, despite the additional parenting challenges, children raised by same-sex parents are no different on measures of general health or emotional adjustment than children raised by opposite-sex parents (Bos et al., 2016).

LINK TO LEARNING

Looking for ways to receive or provide support to LGBTQ+ families in your community? The goal of the advocacy group Family Equality (https://openstax.org/r/104FamEquality) is to "create a world where everyone

can experience the unconditional love, safety, and belonging of family" through empowerment, education, and coordination of LGBTQ+ community groups.

Family Dynamics and Family Systems Theory

During middle adulthood, many parent-child relationships are adjusting to the changing needs of children as they progress into adolescence. As children grow more independent with age, parents spend less time with their children (Larson et al., 1996), especially in group interactions, such as family dinnertime. However, researchers point out that the time parents spend talking one-on-one with their adolescent children doesn't change substantially, which preserves more intimate, high-quality conversations even when activities involving the whole-family decrease. Adolescents report that they spend more time with, rely more on, and argue more with their mothers than with their fathers (Larson et al., 1996; Smetana & Rote, 2019). However, research indicates that this decrease in family time does not predict low-quality parent-child relationships. In fact, relationships with parents often improve as children develop into adolescence (Larson et al., 1996; Ruhl et al., 2015). When asked, "Comparing how well you get along now to how well you got along when [your child] was about 10 years old, would you say that your relationship has generally improved, or has it lost something?", most parents reported growing closer to their children as they grew into adolescents (Shearer et al., 2005).

When considering parenting styles, authoritative parents who continue to exhibit high demand and responsiveness as their children develop are likely to see increasingly positive outcomes of this approach over time, including improved child well-being, life satisfaction, academic competence (Hoskins, 2014; Steinberg et al., 1994), and autonomy (Cramer, 2010). These positive outcomes of supportive parenting continue as children mature into young and middle adulthood. Adolescents who report being satisfied and happy with their parents are more likely to be happily married and engaged in constructive parenting practices themselves twenty years later (Chen et al., 2008).

The **family systems theory** proposes that developing relationships among family members are interrelated. Those families that remain cohesive by sustaining emotional connection, openness, and flexibility may provide the best context for adapting to developmental challenges (Richmond & Stocker, 2006). Mothers may disproportionately take on the burden of maintaining family cohesion. Emotional support from spouses has been found to be the most important protector against depression compared to other support sources such as family, friends, and children (Gariépy et al., 2016). However, in addition to being the primary support resource for their children, women are also more likely to take responsibility for managing the emotional quality of their relationship with their spouse (Loscocco & Walzer, 2013). Compared to men, women receive less emotional support from their spouse and are less likely to be satisfied with the communication within the marital relationship (Barosso, 2021; Ko & Lewis, 2011). Working mothers may therefore be more vulnerable to feeling overwhelmed within the family system. When predicting the association between work and family satisfaction, there are two frameworks: the spillover model and the compensatory model.

The **spillover model** of human relationships predicts that negative emotions generated by interactions within one relationship or environment can spread into other interactions or environments, creating a positive correlation among a person's mood and behaviors across separate relationships or roles. This perspective therefore predicts that negative interactions that adults have at work will overflow into the interactions they have with their family, and vice versa, with a positive association between mood and behaviors in the two roles (Erel & Burman, 1995). Conversely, the **compensatory model** predicts that individuals will seek out and use positive interactions within one role to counterbalance the negative effects or missing benefits from another role. This perspective therefore predicts that adults who are experiencing unhappy interactions at work will seek to offset that experience by cultivating positive interactions with their family, or vice versa. While there is some empirical support for the compensatory hypothesis, there is greater consistent support for the spillover pattern (Belsky & Jaffee, 2006; Chen et al., 2008; Wayne et al., 2017), including among work-from-home

employees (García-Salirrosas et al., 2023).

LINK TO LEARNING

CEO, mother, and author Allyson Downey (2016) found that many families struggle to delegate household responsibilities in a way that provides equal support to both working fathers and mothers. She designed a set of "Family Division of Labor" worksheets (https://openstax.org/r/104FamDivofLab) in response to this finding. Depending on your current household structure, review the relevant worksheets (domestic responsibilities, baby-related responsibilities, child-related responsibilities) and sit down with your domestic partners (roommates, romantic partner, friends, family) and see if you can create a plan.

LIFE HACKS

Building and Maintaining Your Social Convoy

Have you ever traveled on a highway and noticed a group of semitrucks driving together down the road? Or perhaps you have organized a road trip with friends or family and planned to stay together in a group of vehicles during your drive. This approach to travel is known as a convoy, and it can promote a sense of safety and support on a long journey.

Inspired by this concept, Kahn and Antonucci (1980) suggested the convoy model of social relations to describe how adults build a stable and high-quality social network they can trust to be there for them throughout the journey of adulthood. This network may include close romantic partners, family, and friends who provide support and security as we navigate the pathways, challenges, and transitions of adulthood. Strong social networks are associated with increased physical and mental health and decreased mortality (Holt-Lunstad et al., 2010).

So how do busy adults build and maintain strong social convoys? Sociologist Jenny de Jong Gierveld says the key is to start early by seeking and prioritizing personal connections with others who are on a common journey (close family members, parents of children around the same age, neighbors with shared community or values). The earlier you begin to incorporate and involve others in meaningful ways, the better you will be able to create shared experiences and the more likely those people will be able to recognize and provide the support you need (and vice versa). Gierveld asserts that when unexpected events occur, people need to rely on the "convoy" they have in place at that moment (Denworth & Waves, 2018). Following are some excerpted tips from the Mayo Clinic (2023) for building and maintaining your own social convoy:

- **Take note of current connections:** Do an inventory of who is already in your social network. Are there people you have already met you could reconnect with?
- **Make the effort to reach out:** In today's connected world, getting in touch with someone is as simple as a phone call, text message or video visit. If you prefer a method involving less technology, send a handwritten card or letter.
- **Go where people are:** Attend events and community activities. Look for classes or groups with people who have interests similar to yours.
- **Reap the benefits of volunteering:** Join or volunteer for a club or cause that interests you. Volunteering improves your physical and mental health, provides a sense of purpose, and is a great way to build new relationships.
- **Extend and accept invitations:** Don't worry if your social skills feel a bit rusty. An invitation to meet for coffee or go for a walk around the neighborhood may brighten someone else's day as much as it does yours.
- **Be available:** Relationships take time and effort. Whether connecting with a friend you've known for a long time or someone you just met, be present in the moment, and give your full attention to the person and situation." (Mayo Clinic, 2023)[3]

3 Excerpted from the Mayo Clinic Health System: https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/3-health-benefits-of-volunteering

References

Amato, P. R., & Anthony, C. J. (2014). Estimating the effects of parental divorce and death with fixed effects models. *Journal of Marriage and Family, 76*(2), 370–386. https://doi.org/10.1111/jomf.12100

Anderson, L., Washington, C., Krieder, R., & Gryn, T. (2023, June 8). *Home alone: More than a quarter of all households have one person.* U.S. Census Bureau. https://www.census.gov/library/stories/2023/06/more-than-a-quarter-all-households-have-one-person.html

Barosso, A. (2021, January 25). *For American couples, gender gaps in sharing household responsibilities persist amid pandemic.* Pew Research Center. https://www.pewresearch.org/short-reads/2021/01/25/for-american-couples-gender-gaps-in-sharing-household-responsibilities-persist-amid-pandemic/

Belsky, J., & Jaffee, S. R. (2006). The multiple determinants of parenting. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Vol. 3. Risk, disorder, and adaptation* (2nd ed., pp. 38–85). Wiley. https://doi.org/10.1002/9780470939406.ch2

Bianchi, S. M., Hotz, J. V., McGarry, K., & Seltzer, J. A. (2007). *Intergenerational ties: Alter-native theories, empirical findings and trends, and remaining challenges.* California Center for Population Research On-Line Working Paper Series. CCPR-024-06.

Bos, H. M., Knox, J. R., van Rijn-van Gelderen, L., & Gartrell, N. K. (2016). Same-sex and different-sex parent households and child health outcomes: Findings from the National Survey of Children's Health. *Journal of Developmental and Behavioral Pediatrics, 37*(3), 179–187. https://doi.org/10.1097/DBP.0000000000000288

Caplan, B. (2009, January 23). *Good news and bad news on parenting.* The Chronicle of Higher Education. https://www.chronicle.com/article/good-news-and-bad-news-on-parenting/

Chen, T. Y., Geng, J. H., Chen, S. C., & Lee, J. I. (2022). Living alone is associated with a higher prevalence of psychiatric morbidity in a population-based cross-sectional study. *Frontiers in Public Health, 10*, Article 1054615. https://doi.org/10.3389/fpubh.2022.1054615

Chen, Z. Y., Liu, R. X., & Kaplan, H. B. (2008). Mediating mechanisms for the intergenerational transmission of constructive parenting: A prospective longitudinal study. *Journal of Family Issues, 29*(12), 1574–1599. https://doi.org/10.1177/0192513X08318968

Cohn, D., Menasce Horowitz, J., Minkin, R., Fry, R., & Hurst, K. (2022, March 24). *Financial issues top the list of reasons U.S. adults live in multigenerational homes.* Pew Research. https://www.pewresearch.org/social-trends/2022/03/24/financial-issues-top-the-list-of-reasons-u-s-adults-live-in-multigenerational-homes/

Cramer, P. (2010). Young adult narcissism: A 20-year longitudinal study of the contribution of parenting styles, preschool precursors of narcissism, and denial. *Journal of Research in Personality, 45*, 19–28. https://doi.org/10.1016/j.jrp.2010.11.004

Deja, T. (2020, April 10). *As family structures change in the U.S., growing share of Americans say it makes no difference.* Pew Research Center. www.pewresearch.org/short-reads/2020/04/10/as-family-structures-change-in-u-s-a-growing-share-of-americans-say-it-makes-no-difference/

Denworth, L. (2018, June 30). *Why you need a social convoy.* Psychology Today. https://www.psychologytoday.com/us/blog/brain-waves/201806/why-you-need-social-convoy

Downey, A. (2016). *Here's the plan. Your practical, tactical guide to advancing your career through pregnancy and parenthood.* Seal Press.

Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent–child relations: A meta-analytic review. *Psychological Bulletin, 118*, 108–132. https://doi.org/10.1037/0033-2909.118.1.108

García-Salirrosas, E. E., Rondon-Eusebio, R. F., Geraldo-Campos, L. A., & Acevedo-Duque, Á. (2023). Job satisfaction in remote work: The role of positive spillover from work to family and work–life balance. Behavioral Sciences (2076-328X), 13(11), 916. https://doi.org/10.3390/bs13110916

Gariépy, G., Honkaniemi, H., & Quesnel-Vallée, A. (2016). Social support and protection from depression: Systematic review of current findings in Western countries. *The British Journal of Psychiatry, 209*(4), 284–293. https://doi.org/10.1192/bjp.bp.115.169094

Gartland, E. (2022, September 6). Hidden housing instability: 3.7 million people live in doubled-up households. Center on Budget and Policy Priorities. https://www.cbpp.org/blog/hidden-housing-instability-37-million-people-live-in-doubled-up-households

Gillespie, L., & Rubloff, T. (2023, August 23). *Survey: 89% of American workforce prefer 4-day workweeks, remote work, or hybrid work.* Bankrate. https://www.bankrate.com/personal-finance/hybrid-remote-and-4-day-workweek-survey/

Harknett, K. S., & Hartnett, C. S. (2011). Who lacks support and why? An examination of mothers' personal safety nets. *Journal of Marriage and the Family, 73*(4), 861–875. https://doi.org/10.1111/j.1741-3737.2011.00852.x

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLOS Medicine.* https://doi.org/10.1371/journal.pmed.1000316

Hoskins, D. H. (2014). Consequences of parenting on adolescent outcomes. *Societies, 4*(3):506–531. https://doi.org/10.3390/soc4030506

Hull, K. E., & Ortyl, T. A. (2019). Conventional and cutting-edge: Definitions of family in LGBT communities. *Sexuality Research and Social Policy, 16*, 31–43. https://doi.org/10.1007/s13178-018-0324-2

Jensen, T. M., & Lippold, M. A. (2018). Patterns of stepfamily relationship quality and adolescents' short-term and long-term adjustment. Journal of Family Psychology, 32(8), 1130–1141. https://doi.org/10.1037/fam0000442

Johns Hopkins Medicine. (2023). LGBTQ+ family building at Johns Hopkins fertility center. Gynecology & Obstetrics Fertility Center. https://www.hopkinsmedicine.org/gynecology-obstetrics/specialty-areas/fertility-center/lgbtq-families

Kahn , R. L., & Antonucci, T. (1980). Convoys over the life course: Attachment roles and social support. Life-Span Development and Behaviour, 253–267. Academic Press. https://www.researchgate.net/publication/259253271_Convoys_Over_the_Life_Course_Attachment_Roles_and_Social_Support

Keene, J. R. and Batson, C. D. (2010). Under one roof: A review of research on intergenerational coresidence and multigenerational households in the United States. *Sociology Compass,4,* 642–657. https://doi.org/10.1111/j.1751-9020.2010.00306.x

Kelly, M., Soles, R., Garcia, E., & Kundu, I. (2020). Job stress, burnout, work-life balance, well-being, and job satisfaction among pathology residents and fellows. *American Journal of Clinical Pathology, 153*(4), 449–469. https://doi.org/10.1093/ajcp/aqaa013

Kim, S., & Feyissa, I. F. (2021). Conceptualizing "family" and the role of "chosen family" within the LGBTQ+ refugee community: A text network graph analysis. *Healthcare (Basel, Switzerland), 9*(4), 369. https://doi.org/10.3390/healthcare9040369

Ko, L. K., & Lewis, M. A. (2011). The role of giving and receiving emotional support on depressive symptomatology among older couples: An application of the actor-partner interdependence model. *Journal of Social and Personal Relationships, 28*(1), 83–99. https://doi.org/10.1177/0265407510387888

Larson, R. W., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10–18: Disengagement and transformation. *Developmental Psychology, 32*(4), 744–754. https://doi.org/10.1037/0012-1649.32.4.744

Lee, H., Ryan, L. H., Ofstedal, M. B., & Smith, J. (2021). Multigenerational households during childhood and trajectories of cognitive functioning among US older adults. *The Journals of Gerontology: Series B, 76*(6), 1161–1172. https://doi.org/10.1093/geronb/gbaa165

Liang, L. A., Berger, U. & Brand, C. (2019). Psychosocial factors associated with symptoms of depression, anxiety and stress among single mothers with young children: A population-based study. *Journal of Affective Disorders, 242*, 255–264, https://doi.org/10.1016/j.jad.2018.08.013

Lick, D., Tornello, S., Riskind, R., Schmidt, K., & Patterson, C. (2012). Social climate for sexual minorities predicts well-being among heterosexual offspring of lesbian and gay parents. *Sexuality Research and Social Policy, 9*(2). https://doi.org/10.1007/s13178-012-0081-6

Loscocco, K., & Walzer, S. (2013). Gender and the culture of heterosexual marriage in the United States. *Journal of Family Theory & Review, 5*, 1–14. https://doi.org/10.1111/jftr.12003

Marsiglio, W. (2004). When stepfathers claim stepchildren: A conceptual analysis. *Journal of Marriage and Family, 66*(1), 22–39. https://doi.org/10.1111/j.1741-3737.2004.00002.x

Masnick, G. (2015, May 20). *The rise of the single-person household.* Joint Center for Housing Studies of Harvard University. https://www.jchs.harvard.edu/blog/the-rise-of-the-single-person-household

Mayo Clinic Health System. (2023, April 10). *Maintaining healthy relationships with age.* https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/maintaining-healthy-relationships-is-important-as-we-age

Medina-Garrido, J. A., Biedma-Ferrer, J. M., & Bogren, M. (2023). Organizational support for work-family life balance as an antecedent to the well-being of tourism employees in Spain. *Journal of Hospitality and Tourism Management, 57*, 117–129, https://doi.org/10.1016/j.jhtm.2023.08.018

Ortiz-Ospina, E. (2024, March). *Loneliness, solitude, and social isolation: Living alone is becoming increasingly common around the world.* Our World in Data. https://ourworldindata.org/living-alone

Papernow, P. (2017). Clinical guidelines for working with stepfamilies: What family, couple, individual, and child therapists need to know. *Family Process*, 1–27. https://doi.org/10.1111/famp.12321

Pew Research Center. (2011, January 13). *A portrait of stepfamilies.* https://www.pewresearch.org/social-trends/2011/01/13/a-portrait-of-stepfamilies/

Richmond, M. K., & Stocker, C. M. (2006). Associations between family cohesion and adolescent siblings' externalizing behavior. *Journal of Family Psychology, 20*(4), 663–669. https://doi.org/10.1037/0893-3200.20.4.663

Ruhl, H., Dolan, E. A., & Buhrmester, D. (2015). Adolescent attachment trajectories with mothers and fathers: The importance of parent–child relationship experiences and gender. *Journal of Research on Adolescence, 25*, 427–442. https://doi.org/10.1111/jora.12144

Shearer, C. L., Crouter, A. C., & McHale, S. M. (2005). Parents' perceptions of changes in mother-child and father-child relationships during adolescence. *Journal of Adolescent Research,* 20(6), 662–684. https://doi.org/10.1177/0743558405275086

Smetana, J. G., & Rote, W. M. (2019). Adolescent-parent relationships: Progress, processes, and prospects. *Annual Review of Developmental Psychology, 1*, 41–68. https://doi.org/10.1146/annurev-devpsych-121318-084903

Srivastava, S., Debnath, P., Shri, N., & Muhammad, T. (2021). The association of widowhood and living alone with depression among older adults in India. *Scientific Reports, 11*, Article 21641. https://doi.org/10.1038/s41598-021-01238-x

Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N.S., & Dornbusch, S.M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*, 754–770. https://doi.org/10.1111/j.1467-8624.1994.tb00781.x
Swartz, T. T. (2009). Intergenerational family relations in adulthood: Patterns, variations, and implications in the contemporary United States. *Annual Review of Sociology, 35*, 191–212. https://doi.org/10.1146/annurev.soc.34.040507.134615
Taylor, D. (2020, September 17). *Same sex couples are more likely to adopt or foster children*. U.S. Census Bureau. https://www.census.gov/library/stories/2020/09/fifteen-percent-of-same-sex-couples-have-children-in-their-household.html
Thoits, P. A. (1986). Multiple identities: Examining gender and marital status differences in distress. *American Sociological Review, 51*, 259–272. https://doi.org/10.2307/2095520
U.S. Census Bureau. (2021). *American community survey 5-year data (2009-2022)*. (Table S1903) [Data set]. https://www.census.gov/data/developers/data-sets/acs-5year.html
U.S. Census Bureau. (2024). *National single parent day, March 21, 2024*. https://www.census.gov/newsroom/stories/single-parent-day.html
U.S. Surgeon General. (2023). *Our epidemic of loneliness and isolation: The U.S. Surgeon General's advisory on the healing effects of social connection and community*. U.S. Department of Health and Human Services. https://www.hhs.gov/sites/default/files/surgeon-general-social-connection-advisory.pdf
VanOrman, A., & Jacobsen, L. A. (2020). *U.S. household composition shifts as the population grows older: More young adults live with parents*. Population Reference Bureau. https://www.prb.org/resources/u-s-household-composition-shifts-as-the-population-grows-older-more-young-adults-live-with-parents/
Wayne, S. J., Lemmon, G., Hoobler, J. M., Cheung, G. W., & Wilson, M. S. (2017). The ripple effect: A spillover model of the detrimental impact of work–family conflict on job success. *Journal of Organizational Behavior, 38*, 876–894. https://doi.org/10.1002/job.2174
Weston-Williamson, M. (2023, January 5). The state of paid medical and family leave in the U.S. in 2023. The Center for American Progress. https://www.americanprogress.org/article/the-state-of-paid-family-and-medical-leave-in-the-u-s-in-2023/

14.4 Transitions in Caregiving Roles in Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the opportunities and challenges of the sandwich generation period
- Describe the opportunities and challenges of launching children as young adults
- Describe the opportunities and challenges of becoming a grandparent

Terrell is celebrating his fiftieth birthday surrounded by all the people who matter most to him. His husband Mike and daughter Lina thoughtfully planned every detail down to making his favorite cake and gifting him the air fryer he's been eyeing for months. But what will his birthday look like next year? Lina is heading off to college in the fall, and their son Will has his own baby on the way. Terrell's family life is in a time of major transitions, and the next decade of life is sure to bring many more changes.

As you are learning, social development and family functioning in middle adulthood are complicated. Indeed, development generally does become more complicated and varied with age, no matter the domain. So far, you have considered the varied ways that adults might balance existing roles (such as caring for dependent children while working) and explore new roles (such as a change in marital status). In this section, you will examine how adults remain generative as their roles continue to evolve to include launching young adult children, caring for aging parents, and/or becoming grandparents. People at this age are sometimes referred to as "the sandwich generation" (Miller, 1981), a term that envisions the person in middle adulthood "sandwiched" between two slices of bread that represent the needs of the younger and older generations (Figure 14.20).

FIGURE 14.20 The sandwich generation describes middle-aged adults who are contributing to the care of their children and aging parents. (credit: "Three Generations" by Brian/Flickr, CC BY 2.0)

The Sandwich Generation

More than forty years ago, Dorothy Miller, a professor of social work, advocated for a greater focus on the experience and needs of midlife adults "who are sandwiched between their aging parents and their own maturing children" and therefore incurring a "unique set of unshared stresses in which giving of resources and service far outweighs receiving and exchanging them" (Miller, 1981). With a rising number of young adults remaining home with their parents, current economic pressures, and increased life expectancy for aging parents, the challenges facing the current sandwich generation are likely to only increase, with women disproportionately feeling the strain.

During middle adulthood, most U.S. adults are balancing work and family responsibilities as they achieve higher rank and earning power in the workplace, raise children, maintain a marriage, and care for aging parents. These multiple roles can provide rewarding opportunities for the growth of identity, intimacy, and generativity, an experience known as role enhancement (Thoits, 1986). However, the multiple roles can also create stressful demands on the time, attention, and energy of adults in midlife. Mothers between the ages of thirty-five and fifty-four years report the highest levels of stress of any age group, and most cite their family relationships as the primary source of that stress (American Psychological Association, 2008). Compared to men, women are the more likely to provide unpaid care to members of their social network, including their partner's family, in addition to their regular work responsibilities (Family Caregiver Alliance, 2015). When the increased responsibilities associated with occupying multiple roles result in a decline in subjective well-being, the resulting experience is known as **role strain** (Goode, 1960). Role strain can increase feelings of stress, hopelessness, and exhaustion, and decrease opportunities for personal or leisure time (Kelly et al., 2020),

Currently, 25 percent of U.S. adults are simultaneously providing unpaid care for both a dependent child and for an aging parent, with Asian, Hispanic, and Black families more likely than White families to provide care for aging relatives (AARP, 2001). The dual responsibility of caring for both children and aging relatives produces greater financial and emotional difficulties and feelings of role overload or strain than does taking care of only aging parents (Lei et al., 2023). This caregiving overload can result in reduced personal time, reduced social activities, disrupted household routines, lower marital satisfaction, reduction in paid work hours, and deteriorating mental and physical health (Naldini et al., 2016; Noelker & Wallace, 1985; Rose-Rego

et al., 1998). These combined potential negative psychological, social, and financial impacts of providing unpaid care for family members are called the **caregiver burden**. Negative impacts are lessened for caregivers who feel better equipped to provide such care and who hold the perception that they have more social support available from others (Parks & Pilisuk, 1991).

Researchers investigating the caregiver burden advise that increased availability of resources external to the family is the most effective way to offset the psychological, social, and financial burden faced by caregivers (Parks & Novielli, 2000; Parks & Pilisuk, 1991; Swartz & Collins, 2019). These resources might include support and advocacy groups such as the National Alliance for Caregiving, affordable options for home health-care professionals, and an expansion of benefits available from the Family and Medical Leave Act (FMLA). The FMLA protects an adult's job security while they take time away from work to care for a family member. On the thirtieth anniversary of the act's passage, President Joe Biden advocated for expanding benefits to include paid time off, saying "The United States is one of the only countries in the world that does not provide paid leave to its workers, undermining the health and economic security of families and our Nation. As millions more Americans join today's so-called 'sandwich generation,' struggling to care for both young kids and aging parents, we need to help" (Biden, 2023). In the meantime, members of these adults' community, family, friends, and workplace must recognize the incredible value of family caregivers and provide as much practical, tangible, and emotional support as possible to maximize generativity and minimize role strain.

LINK TO LEARNING

The National Alliance for Caregiving (https://openstax.org/r/104CaregivAlian) seeks to "support and empower family caregivers to thrive at home, work, and life" through research, policy analysis, and advocacy. To increase the visibility of caregivers in the United States, they collect and share stories of the lived experiences of real people. Read some of these stories or share your own on their website.

Launching and Empty Nesters

When writing about the challenge of raising children as they approach young adulthood, parenting advice authors Dennis Trittin and Arlyn Lawrence quoted writer Frank A. Clark: "The most important thing that parents can teach their children is how to get along without them." To achieve this goal, Trittin and Lawrence (2013) recommend incremental releases in control, to move the parenting role from "Director" to "Chief Encourager." This process is often referred to as **launching**, a process during which children transition from being dependent on their parents to being independent young adults.

The launching experience is influenced by many economic and cultural factors (Mitchell & Wister, 2015). Several recent societal changes, including rising student loan debt and housing costs, have increased the number of young adult children who have delayed leaving their parents' home or returned home after an initial departure. A young adult child who returns to live with their parents after a period of living independently is referred to as a **boomerang child** (VanOrman & Jacobsen, 2020). The percentage of young adults living with their parents also temporarily spiked during lockdown restrictions imposed early in the COVID-19 pandemic. Cultural context may also influence children's departure from home. Families of collectivistic cultural heritages (such as are found in countries such as China, India, or Southern Europe [e.g., Italy, Greece, or Spain]) are more likely to expect children to remain in the parents' home until marriage or later.

LINK TO LEARNING

While there may be positive reasons for an adult to return home to live with their parents, that arrangement can sometimes be associated with negative outcomes for parents, such as decreased quality of life (Tosi & Grundy, 2019) and postponed parental retirement (Seiter et al., 2023), and decreased well-being for the adult children involved (Newport, 2014). Read this article that provides helpful tips on how adults who live with their

parents (https://openstax.org/r/104LiveatHome) can promote well-being for the whole family.

Most adults ages forty-five to sixty-four years are living in a household without children (VanOrman & Jacobsen, 2020), primarily because their children are now grown and living independently, a phase of parenthood known as the **empty nest**. Empty-nest parents continue to serve as an important source of wisdom to help guide younger parents, given that they can reflect on their parenting challenges and successes with greater clarity and without the daily stresses of parenting. When asked to provide advice for younger parents, empty nesters recommend building relationships with children as the foundation of rewarding parenting and positive child outcomes. Specifically, they emphasize the importance of unconditional love, involvement, and communication as effective strategies for parents to encourage exploration and responsibility as children prepare to leave the nest (Chapman & Schramm, 2018).

The empty-nest phase of life is typically associated with both challenges and benefits. Many adults report "feeling old" now that their kids are out of the house and feeling uncertain about their roles and identities once they are no longer primary caregivers. They also report being concerned about being bored or lonely in the absence of their children. However, married parents report an increase in their marital satisfaction (Bouchard, 2014; Carstensen et al., 1996; Gorchoff et al., 2008), time spent together, communication with each other, privacy (Nagy & Theiss, 2013), and closeness (Tracy et al., 2022). Empty nesters may also have more opportunity to reengage in leisure activities, which have been found to promote subjective well-being among individuals in middle and late adulthood (Heo et al., 2018) (Figure 14.21). For example, increases in leisure time afforded by an empty nest can inspire new and growing hobbies and sports, such as a pickleball or gardening (Heo et al., 2018; Scott et al., 2015). Psychologists advise adults to approach the empty-nest transition with optimism about the new beginnings it can afford midlife adults but to be prepared that sometimes the newfound freedom can be accompanied by a sense of guilt, uncertainty, or even loss.

(a) (b) (c)

FIGURE 14.21 Empty nesters have more opportunity to reengage with each other and their hobbies, such as (a) traveling together, (b) working in one's own garden or a community plot, and (c) trying out new ways to remain active, such as pickleball. (credit a: modification of work "Couple enjoying sunset at Yosemite Half Dome" by Kārlis Dambrāns/Flickr, CC BY 2.0; credit b: modification of work "Tom the Gardener" by Tony Fischer/Flickr, CC BY 2.0; credit c: modification of work "Club Wars – March 2021" by Stephen Rahn/Flickr, Public Domain)

Grandparenthood

In addition to their roles as parents of launching children and children of aging adults, 25 percent of midlife U.S. adults are also grandparents. This number has declined somewhat in the last decade (it was 33 percent in 2014). The average length of grandparenthood for today's adults is thirty years, which means the average U.S. adult will spend half their adulthood as a grandparent (Daw et al., 2016). Hispanic and Black Americans are more likely than White Americans to become grandparents in middle adulthood (Westrick-Payne, 2023).

Grandparents often provide important benefits to the functioning of the family system. Most live within an hour of their grandchildren and consider their contribution to the care of those children to be a necessity (National Association of Child Care Resource and Referral Agencies, 2008). Research indicates that children

can benefit from grandparents' involvement. Adolescents with emotionally involved and financially supportive grandparents exhibit greater kindness, generosity, and academic engagement over time (Yorgason et al., 2011).

Most adults expect and describe the experience of grandparenting to be satisfying and generative (Thiele & Whalen, 2006). Indeed, for some adults, a pronounced longing to become grandparents was related to lower levels of life satisfaction (Dorry et al., 2023). For grandmothers, taking a high level of responsibility for the care of their grandchild is positively associated with satisfaction (Thomas, 1986) (Figure 14.22). However, unlike other unpaid volunteer work, that involvement is not associated with improvements in the grandparents' cognitive health (Henning et al., 2023).

FIGURE 14.22 For grandmothers, involvement with the care of their grandchild is positively associated with life satisfaction. (credit: "Children and Nature" by Children Nature Network/nappy, CC0 1.0)

Grandparents are the primary caregivers for approximately one in ten American children (Carlson, 2021). Custodial grandparents exhibit poorer physical and emotional well-being than noncustodial grandparents (Harnett et al., 2014) and report feelings of isolation from their same-aged peers, as well as shame and guilt regarding the circumstances that led to their need to assume the role of primary caregiver for their grandchildren (Hayslip et al., 2015). However, research finds that contextual factors (such as the availability of support) as well as personal strengths (such as resilience, empowerment, and resourcefulness) can protect against the possible negative outcomes of adults in skipped generation households (Hayslip et al., 2019).

References

American Psychological Association. (2008). *Sandwich generation moms feeling the squeeze.* https://www.apa.org/topics/families/sandwich-generation

Biden, Joseph. (2023, February 3). *A proclamation on the 30th anniversary of the Family and Medical Leave Act.* [Press release] White House. https://www.whitehouse.gov/briefing-room/presidential-actions/2023/02/03/a-proclamation-on-the-30th-anniversary-of-the-family-and-medical-leave-act/

Bouchard, G. (2014). How do parents react when their children leave home? An integrative review. Journal of Adult Development, 21(2), 69–79. https://doi.org/10.1007/s10804-013-9180-8

Carlson, L. (2021). *Grandchildren living in grandparent-headed households, 2019.* (Family Profiles, FP-21-07). National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-21-07

Carstensen, L. L., Graff, J., Levenson, R. W., & Gottman, J. M. (1996). Affect in intimate relationships: The developmental course of marriage. In C. Magai & S. H. McFadden (Eds.). *Handbook of Emotion, Adult Development, and Aging* (227–247). Academic Press. https://doi.org/10.1016/B978-012464995-8/50014-5

Chapman, A., and Schramm, D. (2018). Parenting advice and regrets of empty-nesters. *Family Relations, 67*, 483–496. https://doi.org/10.1111/fare.12337

Daw, J., Verdery, A. M., & Margolis, R. (2016). Kin count(s): Educational and racial differences in extended kinship in the United States. *Population and Development Review, 42,* 491–517. https://doi.org/10.1111/j.1728-4457.2016.00150.x

Dorry, J., Burk, C. L., Stertz, A. M., & Wiese, B. S. (2023). Longing for grandparenthood: Its association with life satisfaction in late middle adulthood. Psychology and Aging, 38(4), 333–344. https://doi.org/10.1037/pag0000723.supp

Family Caregiver Alliance. (2015). *Women and caregiving: Facts and figures.* https://www.caregiver.org/resource/women-and-caregiving-facts-and-figures/

Goode, W. J. (1960). A theory of role strain. *American Sociological Review, 25,* 483–496. https://doi.org/10.2307/2092933

Gorchoff, S. M., John, O. P., & Helson, R. (2008). Contextualizing change in marital satisfaction during middle age. *Psychological Science* 19: 1194–1200. https://doi.org/10.1111/j.1467-9280.2008.02222.x

Harnett, P., Dawe, S., & Russell, M. (2014). An investigation of the needs of grandparents who are raising grandchildren. *Child and Family Social Work*, *19*, 411–420. https://doi.org/10.1111/cfs.12036

Hayslip, B., Jr., Blumenthal, H., & Garner, A. (2015). Social support and grandparent caregiver health: One-year longitudinal findings for grandparents raising their grandchildren. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 70*, 804–812. https://doi.org/10.1093/geronb/gbu165

Hayslip, B., Jr., Fruhauf, C. A., & Dolbin-MacNab, M. L. (2019). Grandparents raising grandchildren: What have we learned over the past decade?. *The Gerontologist,*

59(3), e152–e163. https://doi.org/10.1093/geront/gnx106
Henning, G., Ehrlich, U., Gow, A. J., Kelle, N., & Muniz-Terrera, G. (2023). Longitudinal associations of volunteering, grandparenting, and family care with processing speed: A gender perspective on prosocial activity and cognitive aging in the second half of life. Psychology and Aging, 38(8), 790–807. https://doi.org/10.1037/pag0000780.supp
Heo, J., Ryu, J., Yang, H., Kim, A. C. H., & Rhee, Y. (2018). Importance of playing pickleball for older adults' subjective well-being: A serious leisure perspective. Journal of Positive Psychology, 13(1), 67–77. https://doi.org/10.1080/17439760.2017.1374438
In the middle: A report on multicultural boomers coping with family and aging issues. (2001). *Migration World Magazine; Staten Island, 29*(4), 25–28. https://www.proquest.com/docview/212008584?sourcetype=Scholarly%20Journals
Kelly, M., Soles, R., Garcia, E., & Kundu, I. (2020). Job stress, burnout, work-life balance, well-being, and job satisfaction among pathology residents and fellows. *American Journal of Clinical Pathology*, *153*(4), 449–469. https://doi.org/10.1093/ajcp/aqaa013
Lei, L., Leggett, A .N., & Maust, D. T. (2023). A national profile of sandwich generation caregivers providing care to both older adults and children. Journal of the American Geriatric Society, 71(3): 799–809. https://pubmed.ncbi.nlm.nih.gov/36427297/ https://doi.org/10.1111/jgs.18138
Mayo Clinic Health System. (2022, September 6). Tips for enjoying your empty nest. https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/how-you-can-enjoy-the-empty-nest
Miller, D. A. (1981). The "sandwich" generation: adult children of the aging. Social Work, 26(5), 419–423. https://doi.org/10.1093/sw/26.5.419
Mitchell, B. A., & Wister, A. V. (2015). Midlife challenge or welcome departure? Cultural and family-related expectations of empty nest transitions. The International Journal of Aging & Human Development, 81(4), 260–280. https://doi.org/10.1177/0091415015622790
Nagy, M. E., & Theiss, J. A. (2013). Applying the relational turbulence model to the empty-nest transition: Sources of relationship change, relational uncertainty, and interference from partners. Journal of Family Communication, 13(4), 280–300. https://doi.org/10.1080/15267431.2013.823430
Naldini, M., Pavolini, E., & Solera, C. (2016). Female employment and elderly care: The role of care policies and culture in 21 European countries. Work, Employment, and Society, 30(4), 607–630. https://doi.org/10.1177/0950017015625602
National Association of Child Care Resources and Referral Agencies. (2008). Grandparents: A child care safety net. Child Care Aware. https://www.childcareaware.org/wp-content/uploads/2015/10/2008_grandparents_report-finalrept.pdf
Newport, F. (2014, February 14). Young adults living at home less likely to be "thriving." Gallup News. https://news.gallup.com/poll/167429/young-adults-living-home-less-likely-thriving.aspx
Noelker, L. S., & Wallace, R. W. (1985). The organization of family care for impaired elderly. Journal of Family Issues, 6, 23–44. https://doi.org/10.1177/019251385006001003
Parks, S. H., & Pilisuk, M. (1991). Caregiver burden: Gender and the psychological costs of caregiving. American Journal of Orthopsychiatry, 61(4), 501–509. https://doi.org/10.1037/h0079290
Parks, S. M., & Novielli, K. D. (2000). A practical guide to caring for caregivers. American Family Physician, 62(12), 2613–2620. https://pubmed.ncbi.nlm.nih.gov/11142468/
Rose-Rego, S. K., Strauss, M. E., & Smyth, K. A. (1998). Differences in the perceived well-being of wives and husbands caring for persons with Alzheimer's disease. The Gerontologist, 38, 224–230. https://doi.org/10.1093/geront/38.2.224
Scott, T. L., Masser, B. M., & Pachana, N. A. (2015). Exploring the health and wellbeing benefits of gardening for older adults. *Ageing & Society*, *35*(10), 2176–2200. https://doi.org/10.1017/S0144686X14000865
Seiter, G. M., Lopez, M. J., & Slavov, S. (2023, January). Boomerang children and parental retirement outcomes. National Bureau of Economic Research. https://www.nber.org/papers/w30863
Swartz, K., & Collins, L. G. (2019). Caregiver care. American Family Physician, 99(11), 699–706. https://pubmed.ncbi.nlm.nih.gov/21661713/
Thiele, D. M., & Whelan, T. A. (2006). The nature and dimensions of the grandparent role. Marriage & Family Review, 40(1), 93–108. https://doi.org/10.1300/J002v40n01_06
Thoits, P. A. (1986). Social support as coping assistance. Journal of Consulting and Clinical Psychology, 54(4), 416–423. https://doi.org/10.1037/0022-006X.54.4.416
Thomas, J. L. (1986). Gender differences in satisfaction with grandparenting. Psychology and Aging, 1(3), 215–219. https://doi.org/10.1037/0882-7974.1.3.215
Tosi, M., & Grundy, E. (2018). Returns home by children and changes in parents' well-being in Europe. Social Science & Medicine, 200, 99–106. https://doi.org/10.1016/j.socscimed.2018.01.016
Tracy, E. L., Putney, J. M., & Papp, L. M. (2022). Empty nest status, marital closeness, and perceived health: Testing couples' direct and moderated associations with an actor–partner interdependence model. The Family Journal, 30(1), 30–35. https://doi.org/10.1177/10664807211027287
Trittin, D., & Lawrence, A. (2013). Parenting for the launch: Raising teens to succeed in the real world. Lifesmart Publishing.
VanOrman, A., & Jacobsen, L.A. (2020). US household composition shifts as the population grows older: More young adults live with parents. Population Reference Bureau. https://www.prb.org/resources/u-s-household-composition-shifts-as-the-population-grows-older-more-young-adults-live-with-parents/
Westrick-Payne, K. K. (2023). Prevalence of grandparenthood in the U.S., 2021. (Family Profiles, FP-23-02). National Center for Family & Marriage Research. https://doi.org/10.25035/ncfmr/fp-23-02
Yorgason, J. B., Padilla, W. L., & Jackson, J. (2011). Nonresidential grandparents' emotional and financial involvement in relation to early adolescent grandchild outcomes. Journal of Research on Adolescence, 21(3), 552–558. https://doi.org/10.1111/j.1532-7795.2010.00735.x

14.5 A Successful Middle Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify factors in middle adulthood that lead to life satisfaction
- Describe relationships between happiness, life satisfaction, and culture
- Provide examples of successful middle adulthood

Carmen is on her way to meet her aunt Julia for their monthly catch-up lunch. Julia always asks the same thing once they have put in their usual orders: "So . . . how *are* you?" It's more than just small talk. Her ant expects a real answer. So how *is* she . . . really? Well, Carmen's schedule has been busy lately between family and work responsibilities. Plus, she's been going to physical therapy twice a week to strengthen the muscles around her aging knee. But honestly, Carmen feels fine. Good, in fact. Her knee is feeling stronger and more flexible. She was just put in charge of a new project at work that brings new challenges and a raise. And her stepson Daniel has been doing well in school this year. These lunches bring Carmen a welcome chance to stop and reflect on her life, which usually brings her satisfaction and more confidence in her direction forward.

Middle adulthood is a time when many people experience a peak in their social-cognitive skills (Fortenbaugh et al., 2015; Germine et al., 2011; Hartshorne & Germine, 2015) that can enable productivity, both in their personal growth and contributions to the people and world around them (McAdams et al., 1993). In this section, you will learn about the factors that predict subjective well-being between the ages of thirty and fifty-nine years and the way individuals may optimize their positive experiences at this age.

Happiness and Life Satisfaction in Middle Adulthood

For the last twenty-five years, the field of positive psychology has asserted that aspects of psychological well-being can be defined, measured, and taught (Gibbon, 2020). Psychologists differentiate aspects of subjective well-being, such as happiness and life satisfaction, as related but distinct. For example, happiness reflects the affective or emotional side of well-being, which may not always be stable across time or situations. It is a subjective self-evaluation and therefore has sometimes been measured with a single self-report question, such as "How happy are you?" Researchers who study happiness find that even though happiness is subjective and can be based on potentially short-term factors (such as participation in fun or enjoyable activities), it can also be predicted by more long-term factors, such as financial stability (Diener et al., 2018), perceived social support (Waldinger & Schultz, 2023), and even personality traits such as extraversion (Diener & Lucas, 1999; Oerlemans & Bakker, 2014).

Life satisfaction reflects a more multidimensional and global rating of the quality of the person's life, rather than current moods or circumstances (Diener et al., 2018), and the factors that influence overall life satisfaction can vary cross-culturally, individually, and over the lifespan. For example, life-satisfaction ratings in individualistic cultures like the United States are more influenced by individual factors such as self-esteem and personal achievement, while members of collectivistic cultures give more weight to group-level factors such as family well-being and the way they are perceived by others (Diener & Diener, 1995; Diener et al., 2018; Krys et al., 2018; Uchida & Ogihara, 2012).

LINK TO LEARNING

The Organisation for Economic Co-operation and Development (OECD) is composed of approximately forty democratic countries with similar market-based economic systems. The organization allows participating countries to collaborate and compare data to determine the most effective and growth-promoting policy standards. Look at the OECD Better Life Index (https://openstax.org/r/104BetrLifIndex) to view the results of OECD life-satisfaction data. Where does your country fall compared to its OECD peers? What do you think accounts for the cross-national differences?

Individual differences in worldview or ways of thinking, such as the extent of a person's hopefulness (Ekinci & Koç, 2023; Snyder et al., 1991), optimism (Piper, 2022; Scheier & Carver, 1993), and perceived control (Hooker & Kaus, 1994), can also influence ratings of life satisfaction, even under otherwise difficult circumstances. For example, research on the psychological impact of the COVID pandemic on Chinese adults concluded that perceived control served as a buffer to preserve life satisfaction amid the isolation imposed by the country's severe restrictions on daily activity (Zheng et al., 2020). And while there is no consistent evidence of a universal increase or decrease in overall life satisfaction during early or middle adulthood, either longitudinally or cross-sectionally (Baird et al., 2010; Costa, 1987; Diener & Suh, 1998), what people deem important to life satisfaction may change with age.

Recall that certain cognitive abilities, such as fluid intelligence and processing speed, begin to gradually decline in middle adulthood. Therefore, the ability to maintain higher levels of these cognitive skills may be particularly valued by midlife adults and predictive of higher life satisfaction at that time of life but not at other times of life. For example, higher fluid intelligence is associated with higher life satisfaction for young and middle-aged adults but not older adults (Siedlecki et al., 2008). Higher processing speed is associated with life satisfaction only for midlife adults, but not those who are older or younger (Falzarano et al., 2022). Fluid intelligence and processing speed may be particularly valuable to midlife adults who can utilize those cognitive abilities to manage the everyday challenges associated with their multiple roles as caregivers, employees, and community leaders.

LINK TO LEARNING

One of the most commonly used assessments of life satisfaction is the Satisfaction With Life Scale (SWLS) (https://openstax.org/r/104LifeSatisftn) developed by Diener and colleagues (1985). This scale has been validated in cross-national studies in the United States, South Africa, Asia, and Europe as well as within various ethnic groups within the United States, including Black and Mexican American populations (Flores & Lee, 2019).

Even though perceived health is a more important consideration in quality-of-life ratings in older adulthood than in early or middle adulthood (George et al., 1985), people also change the way they evaluate their perceived health over the lifespan. Overall, longitudinal research indicates that oberall perceptions of well being and life satisfaction tend to increase in middle adulthood (Buecker et al., 2023). In studies of patients with cancer and injection drug users, global health was unrelated to life satisfaction (Hinz et al., 2022; Russell et al., 2006). Age also influences expectations regarding life satisfaction: younger adults are more likely to overestimate both their future happiness and their life satisfaction (Schwandt, 2016), whereas older adults are more likely to underestimate future life satisfaction.

IT DEPENDS

Does Having Kids Make You Happier?

While Erik Erikson's work often refers to the generativity of middle adulthood in terms of how an individual contributes to future generations, it is often popularly assumed that the prescribed way to achieve generativity, and therefore well-being, is to have children. This assumption is an oversimplification of Erikson's theory and is not supported by research. In 1991, Baumeister conducted a meta-analysis of research related to parenthood and well-being and concluded that having children was associated with a decrease in happiness and life satisfaction in adulthood. However, these results should be considered in context. Baumeister added to his conclusions that parenting can increase a person's sense of meaning. In a follow-up study, Deaton and Stone (2014) found that while parents' overall reported life satisfaction is not significantly different from that of nonparents when controlling for factors such as education and income, parents do experience more highs and lows than nonparents.

Nelson and colleagues (2014) further extended this work by proposing that it is more important to determine *why* and *how* parents might experience happiness differently from nonparents. In a review of decades of research, they found that several individual differences appear to account for happiness differences between parents and nonparents. Some of these variables are listed in Table 14.2. What other individual and group differences might help predict the impact of parenting on life satisfaction? What other ways might an individual achieve generativity in middle adulthood instead of or in addition to parenting?

Variables Moderating the Relationship between Happiness and Parenthood	Explanation
Parental status (i.e., parenting by choice)	Unplanned pregnancy or infertility may predict anxiety, frustration, and perceived loss of control that reduce feelings of happiness.
Parental age	Younger parents may have less maturity and resources to manage the challenges of parenting.

TABLE 14.2 Complex Relationship between Parenting and Happiness (source: Nelson et al., 2014)

Variables Moderating the Relationship between Happiness and Parenthood	Explanation
Child age	Younger children require more time and energy and are more likely to increase parental sleep deprivation.
Gender	Fatherhood is more likely to predict happiness than motherhood, perhaps because the responsibilities of caregiving are not typically equally shared.
Marital status	Married parents typically have greater resources and support for caregiving.
Socioeconomic status (SES)	Parents with low SES have fewer financial resources to meet the challenges of childcare.
Social support	Available social support can lower stress and potentially provide direct aid in childcare.
Child temperament and behavior	Coping with a child exhibiting high negative emotions or behavioral problems can create stress and decrease parent-child connectedness.

TABLE 14.2 Complex Relationship between Parenting and Happiness (source: Nelson et al., 2014)

Possible and Ideal Selves

How does a person achieve happiness amid the inevitable demands of meeting the generativity challenge proposed by Erikson in middle adulthood? Psychologists suggest that personal happiness and generativity can be intertwined. For example, care for others can produce **eudaimonic happiness**, a type of happiness derived from a sense of purpose or meaning in life. Eudaimonic happiness is not so much produced by activities that are fun but rather by those that are rewarding, such as work or service to others. It can be produced by a job that is tough but makes life better for others, when a child kisses you goodnight and says they love you after an otherwise long and stressful day, or when you rescue and provide care and shelter for an injured or abandoned animal. Furthermore, McAdams and de St. Aubin (1992) suggest that successful generativity directed both by what others need and by what the individual wants. Longitudinal studies of midlife adults find that those who have higher mental well-being at age forty-two years exhibit higher generativity at age fifty years (Reinilä et al., 2023). Life satisfaction can therefore be greatly enhanced for many in middle adulthood by caring for and about others while maintaining and potentially enhancing the self-care cultivated in earlier stages of psychosocial development.

How do people in middle adulthood balance care of self and others? Change and stability? Past, present, and future? Health psychologist Gail M. Williamson suggests that "those who age well are those who feel in control of at least some of the important aspects of their lives and maintain (perhaps with the help of others) the normal activities that they value most" (2002, p. 683). What aspects of your actual self do you value most and want to nurture and maintain (self-care)? What generative opportunities and challenges are encountered in middle adulthood? The challenge is to establish priorities and make decisions that build bridges between your actual and your possible self to optimize your subjective well-being. Professionals in the fields of psychology, education, and management sometimes use a process known as task analysis to break otherwise complicated or challenging tasks (like living a happy and satisfying adulthood) into smaller steps, based on known

preconditions and obstacles. Use the task analysis questions provided here to brainstorm and plan ways to link what is actual with what is possible, keeping in mind what you've learned from research about what predicts happiness and life satisfaction in adulthood.

Task Analysis

"Aging is the extraordinary process whereby you become the person you always should have been." —David Bowie

Visualize your possible self as a fifty-five-year-old adult self. If you are already fifty-five years old or older, then compare what you would have imagined as a twenty-two-year-old with your actual self. What is your life like at fifty-five years old? What are the most important relationships in your life? Where are you living? What makes you happy? What have been your biggest challenges? Use that visualization to chart a pathway from early adulthood through middle adulthood that focuses on one or two important goals for well-being that utilize your current strengths and priorities to address challenges and maximize healthy and productive growth.

- Two important goals as I complete middle adulthood are (1)_____(2)_____
- How do these goals align with my current priorities and values? _____
- What strengths do I already have that will help me to reach these goals? (1)___ (2)___
- What challenges do I anticipate in trying to reach these goals (could be personal, environmental, or social factors)? (1)_____ (2)_____
- What resources will I need to find or develop to help address these challenges (could be personal, environmental, or social factors)? (1)_____ (2)_____
- What are the next best steps towards achieving this goal? (1)_____ (2) _____
- How will my life change once I achieve this goal? What will improve? What new challenges might arise? _____

LIFE HACKS

What Makes for a Good Life?

Despite the way the media and pop culture often idealize and glamorize young adulthood, there are few significant differences in life satisfaction across all the stages of adulthood. That stability in life satisfaction likely occurs because as our opportunities and challenges change, so do the environments around them and the priorities we attach to them (Ryff & Singer, 1998).

Based on what you have learned so far in this course, what aspects of life do you think might positively influence these dimensions at each stage of life (Table 14.3)? Influential aspects of development are already suggested for some dimensions of well-being at each age. Can you brainstorm how each box might be completed?

Dimensions of Well-Being	Adolescence	Young Adulthood	Middle Adulthood	Late Adulthood
Self-acceptance	• •	• •	• •	• •
Positive relationships	• •	• *Romantic relationships* •	• •	• •

TABLE 14.3 Well-Being at Each Age (source: Adapted from Keyes and Ryff [1999; Table 1: Dimensions of Well-

Dimensions of Well-Being	Adolescence	Young Adulthood	Middle Adulthood	Late Adulthood
Autonomy	• •	• •	• •	• •
Mastery	• *Academic achievement* •	• •	• •	• •
Sense of purpose	• •	• •	• *Work* •	• •
Personal growth	• •	• •	• •	• *Wisdom* •

TABLE 14.3 Well-Being at Each Age (source: Adapted from Keyes and Ryff [1999; Table 1: Dimensions of Well-Being])

References

Baird, B. M., Lucas, R. E., & Donnellan, M. B. (2010). Life satisfaction across the lifespan: Findings from two nationally representative panel studies. *Social Indicators Research, 99*(2), 183–203. https://doi.org/10.1007/s11205-010-9584-9

Baumeister, R. F. (1991). *Meanings of life*. Guilford.

Buecker, S., Luhmann, M., Haehner, P., Bühler, J. L., Dapp, L. C., Luciano, E. C., & Orth, U. (2023). The development of subjective well-being across the life span: A meta-analytic review of longitudinal studies. *Psychological bulletin*, *149*(7–8), 418. https://doi.org/10.1037/bul0000401

Costa, P. T., Zonderman, A. B., McCrae, R. R., Cornoni-Huntley, J., Locke, B. Z., & Barbano, H. E. (1987). Longitudinal analyses of psychological well-being in a national sample: Stability of mean levels. *Journal of Gerontology, 42*, 50–55. https://doi.org/10.1093/geronj/42.1.50

Deaton, A., & Stone, A. A. (2014). Evaluative and hedonic wellbeing among those with and without children at home. *Proceedings of the National Academy of Sciences, 11*(4), https://doi.org/10.1073/pnas.1311600111

Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (213–229). Russell Sage Foundation. https://psycnet.apa.org/record/1999-02842-000

Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology, 68*, 653–663. https://doi.org/10.1037/0022-3514.68.4.653

Diener, E., & Lucas, R. E. (1999). Personality and subjective well-being. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), Well-being: The foundations of hedonic psychology (pp. 213–229). Russell Sage Foundation. https://psycnet.apa.org/record/1999-02842-011

Diener, E., & Suh, E. M. (1998). Subjective well-being and age: An international analysis. In K.W. Schaie & M.P. Lawton (eds.). *Annual Review of Gerontology and Geriatrics (17*, 304–324). Springer. https://psycnet.apa.org/record/1997-36657-011

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. Nature Human Behaviour, 2(4), 253–260. https://doi.org/10.1038/s41562-018-0307-6

Ekinci, N., & Koç, H. (2023). Grit, general self-efficacy, and life satisfaction: The mediating role of hope. Journal of Community Psychology, 51(3), 1288–1299. https://doi.org/10.1002/jcop.22962

Falzarano, F. B., Yazdani, N., Zucchetto, J. M., & Siedlecki, K. L. (2022). Does neurocognition predict subjective well-being? *Journal of Happiness Studies*, *23*(8), 3713–3730. https://doi.org/10.1007/s10902-022-00565-8

Flores, L. Y., & Lee, H. S. (2019). Assessment of positive psychology constructs across cultures. In M. W. Gallagher & S. J. Lopez (Eds.) Positive Psychological Assessment: A Handbook of Models and Measures (2nd Ed.). American Psychological Association. https://doi.org/10.1037/0000138-004

Fortenbaugh, F. C., et al. (2015). Sustained attention across the life span in a sample of 10,000: Dissociating ability and strategy. *Psychological Science, 26*(9), 1497–1510. https://doi.org/10.1177/0956797615594896

George, L., Okun, M., & Landerman, R. (1985). Age as a moderator of the determinants of life satisfaction. *Research on Aging, 7(2)*, 209–234. https://doi.org/10.1177/0164027585007002004

Germine, L. T., Duchaine, B., & Nakayama, K. (2011). Where cognitive development and aging meet: Face learning ability peaks after age 30. *Cognition, 118*(2), 201–210. https://doi.org/10.1016/j.cognition.2010.11.002

Gibbon, P. (2020). Martin Seligman and the rise of positive psychology. *Humanities, 41*(3). https://www.neh.gov/article/martin-seligman-and-rise-positive-psychology

Guvenen, F., Karahan, F., Ozkan, S., & Song, J. (2015). *What do data on millions of U.S. workers reveal about life-cycle earnings dynamics?* (Report No. 710). Federal Reserve Bank of New York Staff Reports. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr710.pdf https://doi.org/10.3982/ECTA14603

Hartshorne, J. K., & Germine, L. T. (2015). When does cognitive functioning peak? The asynchronous rise and fall of different cognitive abilities across the life span. *Psychological Science, 26*(4), 433–443. https://doi.org/10.1177/0956797614567339

Hinz, A., Schulte, T., Ernst, J., & Mehnert-Theuerkauf, A. (2022). Importance of and satisfaction with domains of health-related quality of life in cancer rehabilitation. Cancers, 14(8), 1991. https://doi.org/10.3390/cancers14081991

Hooker, K., & Kaus, C. R. (1994). Health-related possible selves in young and middle adulthood. Psychology and Aging, 9(1), 126–133. https://doi.org/10.1037/0882-7974.9.1.126

Kahn, R. L. & Antonucci, T. C. (1980). Convoys over the life course: Attachment, roles, and social support. In P.B. Baltes & O.C. Brim (Eds.). *Lifespan, development, and behavior* (254–283). Academic Press. https://www.researchgate.net/publication/259253271_Convoys_Over_the_Life_Course_Attachment_Roles_and_Social_Support

Keyes, C. L. M., & Ryff, C. D. (1999). Psychological well-being in midlife. *Life in the middle* (pp. 161–180). Academic Press. https://doi.org/10.1016/B978-012757230-7/50028-6

Krys, K., Uchida, Y., Oishi, S., & Diener, E. (2018). Open society fosters satisfaction: Explanation to why individualism associates with country level measures of satisfaction. *The Journal of Positive Psychology, 14*, 768–778. https://doi.org/10.1080/17439760.2018.1557243

McAdams, D. P., & de St. Aubin, E. D. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography.

Journal of Personality and Social Psychology, 62(6), 1003. https://psycnet.apa.org/doi/10.1037/0022-3514.62.6.1003
McAdams, D. P., St. Aubin, E. D., & Logan, R. L. (1993). Generativity among young, midlife, and older adults. *Psychology and Aging, 8*(2), 221–230. https://doi.org/10.1037//0882-7974.8.2.221
Nelson, S. K., Kushlev, K., & Lyubomirsky, S. (2014). The pains and pleasures of parenting: When, why, and how is parenthood associated with more or less well-being? Psychological Bulletin, 140(3), 846–895. https://doi.org/10.1037/a0035444
Oerlemans, W. G. M., & Bakker, A. B. (2014). Why extraverts are happier: A day reconstruction study, Journal of Research in Personality, 50, 11–22. https://doi.org/10.1016/j.jrp.2014.02.001.
Piper, A. (2022). Optimism, pessimism and life satisfaction: An empirical investigation. International Review of Economics, 69(2), 177–208. https://doi.org/10.1007/s12232-022-00390-8
Reinilä, E., Kekäläinen, T., Saajanaho, M., & Kokko, K. (2023). The structure of mental well-being and its relationship with generativity in middle adulthood and the beginning of late adulthood. International Journal of Behavioral Development, 47(4), 328–338. https://doi.org/10.1177/01650254231165837
Russell, L. B., Hubley, A. M., Palepu, A., & Zumbo, B. D. (2006). Does weighting capture what's important? Revisiting subjective importance weighting with a quality of life measure. *Social Indicators Research, 75*, 141–167. http://dx.doi.org/10.1007/s11205-004-2528-5
Ryff, C. D. & Singer, B. (1998). Middle age and well-being. *Encyclopedia of Mental Health, 2*, 707–719.
Scheier, M. F. & Carver, C. S. (1993). On the power of positive thinking: The benefits of being optimistic. *Current Directions in Psychological Science, 2*, 26–30. https://doi.org/10.1111/1467-8721.ep10770572
Schwandt, H. (2016). Unmet aspirations as an explanation for the age U-shape in wellbeing. *Journal of Economic Behavior & Organization, 122*, 75–87. https://doi.org/10.1016/j.jebo.2015.11.011
Siedlecki, K. L., Tucker-Drob, E. M., Oishi, S., & Salthouse, T. A. (2008). Life satisfaction across adulthood: Different determinants at different ages? *The Journal of Positive Psychology, 3*(3), 153–164. https://doi.org/10.1080/17439760701834602
Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60*, 570–585. https://doi.org/10.1037//0022-3514.60.4.570
Teshale, S. M., & Lachman, M. E. (2016). Managing daily happiness: The relationship between selection, optimization, and compensation strategies and well-being in adulthood. *Psychology and Aging, 31*(7), 687–692. https://doi.org/10.1037/pag0000132
Uchida, Y., & Ogihara, Y. (2012). Personal or interpersonal construal of happiness: A cultural psychological perspective. *International Journal of Wellbeing, 2,* 354–369. http://dx.doi.org/10.5502/ijw.v2.i4.5
Waldinger, R. J., & Schulz, M. S. (2023). *The good life: Lessons from the world's longest scientific study of happiness.* Simon & Schuster.
Williamson, G. M. (2002). Aging well: Outlook for the 21st century. In C. R. Snyder & S. J. Lopez, *Handbook of positive psychology* (676–686). Oxford University Press. https://psycnet.apa.org/record/2002-02382-049
Zheng, L., Miao, M., & Gan, Y. (2020). Perceived control buffers the effects of the COVID-19 pandemic on general health and life satisfaction: The mediating role of psychological distance. Applied Psychology. Health and Well-Being, 12(4), 1095–1114. https://doi.org/10.1111/aphw.12232

Key Terms

boomerang child young adult child who returns to live with their parents after a period of living independently

caregiver burden potential negative psychological, social, and financial impacts of providing unpaid care for family members

compensatory model perspective that predicts that individuals will seek out and use positive interactions within one relationship or role to counterbalance the negative effects or missing benefits from another relationship or role

defense mechanism psychological strategy to manage anxiety and stress triggered by developmental challenges

egalitarian marriage marriage in which responsibilities are shared equally between partners, and roles are not prescribed according to traditional gender role stereotypes

empty nest household of parents whose adult children have left the parental home to live independently

eudaimonic happiness happiness derived from a perceived sense of purpose or meaning in life

family of choice individuals who are not necessarily related by marriage or biology but have formed a committed kin-like network to play significant roles in each other's lives

family systems theory perspective that family dynamics are best understood as part of a complex and developing family unit, rather than as singular individuals or dyadic relationships

generativity versus stagnation sixth stage of Erikson's psychosocial development, which involves focusing one's energy on giving back to others and continuing to have productive and creative endeavors

gray divorce divorces among couples after age fifty years

launching process during which children transition from dependence on their parents into independent young adults

role enhancement when people experience role expansion as rewarding

role expansion increase in the scope of behaviors, positions, and responsibilities expected of a person

role strain when the increased responsibilities associated with occupying multiple roles result in a decline in subjective well-being

spillover model perspective that predicts the emotions generated by interactions within one relationship or environment can spread into other interactions or environments, creating a positive correlation among a person's mood and behaviors across separate relationships or roles

Summary

14.1 Development of Self, Personality, and Identity in Middle Adulthood

- According to many theories regarding the development of self, the primary challenge of middle adulthood is to prioritize the mentoring and care of others (generativity).
- Generativity can be achieved through the expansion of adult roles at home, work, and in the community. While the transitions at this time of life can be challenging, anxiety associated with these changes can be managed through mature defense mechanisms.
- Failure to embrace generativity or use of immature defense mechanisms can result in unhealthy developmental stagnation. However, the experience of a midlife crisis is not typical.
- Dispositional personality traits can be stable throughout adulthood as a result of niche-picking and gene-environment correlations. Environments that are a good fit for personality traits promote congruence and satisfaction.
- Environments that present challenges or role expansion may facilitate changes to perspectives, goals, and behaviors as people adapt to new experiences. These changes become integrated into people's life stories.
- Identity continues to develop as part of a person's life story but increases in its stability over time.

14.2 Contexts: Love and Romance in Middle Adulthood

- Attachment style can be applied to understand close relationships throughout life. Secure attachments in

adulthood are associated with greater well-being, while insecure attachments are associated with greater psychological and physical distress.
- Love relationships can vary in their level of intimacy, passion, and commitment.
- While marriage is typically associated with psychological, financial, and health benefits, the age of first marriage has been increasing over time.
- Laws protecting marriage equality for those in the LGBTQ+ community have improved worldwide, but significant legal barriers still exist in most countries.
- Spousal roles in marital relationships vary, with some organized more traditionally by gender roles and others more egalitarian. Conflict resolution, communication, trust, and friendship are key to happy marital relationships.
- While the overall U.S. divorce rate has been gradually declining for several decades, gray divorces have been gradually rising.
- Although divorce can have negative consequences, these negative impacts tend to decrease over time. Legal mediation and divorce counseling during the divorce process can decrease the negative impacts on spouses and children.
- Dating in midlife can be different from young adulthood as the availability and preferences of partners change with age. Most divorced adults remarry but face additional challenges as they reconcile impacts of divorce and integrate blended families.

14.3 Households and Parenting in Middle Adulthood

- While family households are the most common type, household types are becoming more varied over time, each with unique features, benefits, and challenges.
- Parents in middle adulthood will encounter changes as their growing children become more independent, but most parent-child relationships are able to adjust and retain or even improve their closeness.
- As the family system changes throughout middle adulthood, parents may experience positive or negative spillover between their work and family life. Family cohesion can be promoted by flexibility and support within the family.

14.4 Transitions in Caregiving Roles in Middle Adulthood

- In middle adulthood, parents may find themselves contributing to the care of their children and their aging parents, giving rise to the term “sandwich generation.” These responsibilities can create a type of role strain called caregiver burden.
- Parents in the launching phase must encourage their young adult children to develop independence while maintaining a supportive home base. This transition sometimes involves young adult children temporarily returning to live in the parents’ home after an initial departure.
- Once children are no longer living in the home, midlife parents enter the empty-nest period. While this transition requires an adjustment away from the demands of parenting, empty-nest parents can reinvest in their relationship and leisure activities and serve as a source of wisdom to younger generations.
- Some parents become grandparents in middle adulthood. Grandparents are often an important source of support and care to their grandchildren, which can result in both satisfaction and also stress.

14.5 A Successful Middle Adulthood

- Happiness in adulthood can be based on both short-term factors, such as enjoyable activities, and longer-term factors, such as financial stability or social support.
- Life satisfaction in adulthood is influenced both by individual factors as well as cultural values. Influences on life satisfaction also change with age.
- Generative priorities can produce happiness derived from a sense of purpose or meaning, but successful growth in adulthood is facilitated by balancing one’s self with the responsibility to care for others.
- Reflection on one’s actual and possible selves can facilitate this balance and healthy development of self.

Review Questions

1. Amari finds fulfillment in his mentoring opportunities as a manager at work and as a youth sports coach. These priorities are most consistent with which of Erikson's psychosocial stages?
   a. identity versus role confusion
   b. intimacy versus isolation
   c. generativity versus stagnation
   d. introversion versus extroversion

2. As a spouse, parent, community leader, and small business owner, Ella has many new responsibilities in middle adulthood compared to when she was a younger adult. This increase in responsibilities and functions is called role _____.
   a. expansion
   b. enhancement
   c. strain
   d. burden

3. According to Valliant's theory of successful aging, which two behaviors are considered mature defense mechanisms for coping with the anxiety produced by the challenges of adult development?
   a. displacement and compensation
   b. humor and sublimation
   c. selectivity and optimization
   d. exploration and commitment

4. Based on Marcia's identity status, what is the typical direction of identity development in middle adulthood?
   a. Identity is achieved as we transition out of middle adulthood into the later years.
   b. Adult identity becomes diffused amid the demands of multiple roles and responsibilities.
   c. Identity status generally progresses toward achievement during middle adulthood.
   d. Most adults experience a midlife identity crisis, with confusion over where their life is "supposed" to go.

5. Most adults identify their overall relational styles as consistent with _____ attachment.
   a. anxious
   b. avoidant
   c. insecure
   d. secure

6. Sternberg's triangular theory of love asserts that complete love is characterized by intimacy, passion, and what third element?
   a. friendship
   b. commitment
   c. attachment
   d. generativity

7. Since 1960 in the United States, what has been the status of the median age of first marriage?
   a. It increased for women but decreased for men.
   b. It decreased for women but increased for men.
   c. It increased for both men and women.
   d. It decreased for both men and women.

8. What term describes a marriage in which roles are delegated equally between the spouses and not prescribed according to conventional/traditional gender roles?
   a. traditional
   b. equity-based
   c. blended
   d. egalitarian

9. Greater attention to which role was called for in a recent report by the U.S. Surgeon General?
   a. the stigma of loneliness and isolation
   b. gray divorces and their social impact
   c. harmony in blended households
   d. insurance coverage for medical reproductive assistance

10. An individual is having a very rough time at work lately, with their supervisor criticizing tiny mistakes that would ordinarily be perfectly fine. This frustration causes them to start being short and sarcastic with their partner, and too harsh on their children once they get home. This demonstrates which framework of the association between work and family satisfaction?
   a. compensatory
   b. mediational
   c. attachment
   d. spillover

11. What is the term used for a living situation that is comprised of grandparents and their grandchildren who are under twenty-five-years-old?
   a. blended family
   b. skipped generation household
   c. doubled-up household
   d. extended family

12. What parenting style is most likely to see positive child outcomes as children develop during adolescence?
   a. indulgent
   b. insecure
   c. authoritarian
   d. authoritative

13. Sarabi had been living independently with a roommate for several years when her college temporarily halted in-person classes during the COVID-19 pandemic. She returned home to live with her parents and finish her college courses remotely. Sarabi is an example of what role?
   a. empty nester
   b. boomerang child
   c. sandwich child
   d. rebound student

14. What is the term used for individuals in middle adulthood who are simultaneously contributing to the care of their children and their aging parents?
   a. the sandwich generation
   b. the skipped generation
   c. empty nesters
   d. blended families

15. What is the name of the period in which parents are guiding their children from being dependent on the parents to being independent young adults?
   a. mediation
   b. niche-picking
   c. launching
   d. parental leave

16. After spearheading an initiative to revitalize the playground in their local community, Rieve feels a sense of purpose and accomplishment despite the work that was involved in leading the project. What is the type of happiness that might be derived from this experience called?
   a. generative
   b. launched
   c. eudaimonic
   d. consummate

17. In middle adulthood, _____ _____ is more predictive of life satisfaction than it is at other ages.
   a. empty nesting
   b. mental health
   c. perceived control
   d. processing speed

18. The field of positive psychology has asserted that aspects of _____ _____ can be defined and measured.
   a. mental illness
   b. psychological well-being
   c. pathological adjustment
   d. caregiver burden

Check Your Understanding Questions

19. Identify two similarities and two differences between Erikson's psychosocial perspective and Levinson's seasons of life perspective of development in middle adulthood.

20. Supporting your answer with an example, explain how a person's roles or environment might promote personality change in middle adulthood.

21. Identify two positive outcomes associated with a secure attachment style in adulthood.

22. Identify two positive outcomes or benefits of marriage.

23. Identify two factors that might help to explain the increase in gray divorces in the United States.

24. Define the term *family of choice* and identify some circumstances in which this social network may be particularly useful to adults.

25. Identify two commonly cited reasons for why individuals may form multigenerational households.

26. What factors are increasing the number of midlife adults having the sandwich generation experience?

27. What are some of the potential negative impacts of the caregiver burden?

28. Identify two factors that predict adult happiness.

29. Identify two cross-cultural differences in how adults evaluate their life satisfaction.

30. Explain why task analysis can be helpful for setting and achieving goals.

Personal Application Questions

31. Think about someone in middle adulthood whom you admire. How does this individual demonstrate generativity in their personal or professional life? Provide examples of their contributions and reflect on what you think motivates them.

32. Erikson's theory emphasizes generativity versus stagnation during middle adulthood. Reflect on your goals as you progress through adulthood. How do you hope to contribute to your family, work, or community, and what challenges might you face?

33. Imagine how your personality traits might evolve as you enter middle adulthood. Based on what you've read, which traits do you think are likely to remain stable, and which might change? Explain your reasoning with references to the concepts of stability and change in personality.

34. Consider Sternberg's triangular theory of love, which identifies intimacy, passion, and commitment as key components of relationships. Reflect on a relationship you've observed (it could be a relative, friend, or public figure) and analyze how these three components are balanced or unbalanced in that relationship. How do you think this balance impacts their overall satisfaction?

35. Marriage and divorce rates have changed significantly over recent decades. Reflect on societal changes, such as increased age at first marriage, marriage equality, and higher rates of cohabitation, and how these trends have influenced your views or expectations of relationships in adulthood. What role do you think cultural norms and values play in these shifts?

36. Reflect on the dynamics of your current household structure. What are some of the benefits and challenges you experience within this structure? If you were to imagine a different household setup (e.g., living alone, living in a multigenerational household, or living as part of an LGBTQ+ family), how do you think your life might change? Consider the potential social, financial, and emotional impacts of these changes.

37. Think about a family member or close friend who is in middle adulthood and balancing multiple caregiving roles (e.g., for children, aging parents, or grandchildren). How do you see them managing these responsibilities? What factors do you think are key in helping them cope with the demands of their household?

38. Reflect on the concept of the "sandwich generation"—adults who are simultaneously caring for aging parents and supporting their own children. Do you know someone who is or was part of the sandwich generation? How do you think this dual responsibility might affect someone's emotional well-being, stress levels, and personal relationships?

39. The process of launching young adult children involves letting go while providing support. Reflect on a real-life situation (it could be from your own family, a friend's experience, or even a public figure) where a parent had to navigate this transition. How did the parent balance offering guidance while promoting independence? How do you think cultural expectations or family dynamics influenced their approach?

40. Becoming a grandparent can be both a rewarding and complex experience. Reflect on the role that grandparents play in your family or community. How do their interactions influence family dynamics, whether positively or negatively? If you were to become a grandparent, what type of role would you envision for yourself, and why?

41. Consider how cultural values influence your ideas of happiness and life satisfaction. In your community or family, do you observe more individualistic or collectivistic values? How do these values impact your perception of what it means to lead a satisfying life, especially as you think about your middle adult years?

42. Imagine yourself at the age of 55. What does a successful middle adulthood look like to you? Describe your ideal life in terms of career, relationships, health, and personal growth. What steps can you take now to

align your current goals with your vision for middle adulthood?

Essay Questions

43. Explain what the challenge of generativity means in middle adulthood and give two examples of such challenges. What are opportunities and obstacles to healthy generativity?

44. As individuals approach middle adulthood, they often face new challenges and opportunities that require them to adapt their sense of identity. How might changes in work, family dynamics, or health influence one's identity during this stage? Discuss how identity adaptation can lead to personal growth and fulfillment.

45. Analyze how attachment styles from early life influence relationships in middle adulthood. Discuss how these attachment patterns may affect marital satisfaction, caregiving responsibilities, and stress levels. Provide examples from the text to illustrate how secure, avoidant, and anxious attachment styles manifest during this stage.

46. Assess the role of communication styles and conflict resolution in marital satisfaction during middle adulthood. Referencing Gottman's research, discuss the impact of positive and negative communication patterns on relationship stability. How can couples in middle adulthood use these strategies to maintain a healthy, fulfilling relationship?

47. Multigenerational households are increasingly common in middle adulthood. Analyze the factors that contribute to the rise of multigenerational living, such as financial considerations, cultural values, or the need for caregiving support. How do these households impact the family dynamic, and what are some strategies for managing the complexities that arise in these living situations?

48. Middle adulthood often involves managing multiple roles—caregiver, professional, parent, and more. Discuss how role enhancement (the positive impact of fulfilling multiple roles) and role strain (the negative impact) can affect well-being during this life stage. Reflect on strategies that individuals can use to maintain balance, prevent burnout, and sustain their sense of purpose across these varied responsibilities.

49. Life satisfaction is influenced by both short-term factors, such as enjoyable activities, and long-term factors, such as financial stability and social support. Reflect on these influences and discuss how life satisfaction might change during middle adulthood. What role do factors like career stability, family relationships, and health play in contributing to or detracting from overall satisfaction during this stage of life.

50. Life satisfaction is evaluated differently across cultures. In some cultures, individual achievements and personal success are key factors, while in others, family well-being and social harmony are prioritized. Analyze how cultural values might influence life satisfaction during middle adulthood. Provide examples of how different cultures emphasize unique aspects of well-being and how these perspectives shape individual goals and priorities.

Physical and Cognitive Development in Late Adulthood (Age 60 and Beyond)

15

FIGURE 15.1 Late adulthood is a time during which many physical and cognitive changes occur, and many people find themselves celebrating their decision to retire. This chapter describes the many changes older adults experience. (credit: modification of work "Eric's Retirement Party" by "SheltieBoy"/Flickr, CC BY 2.0)

CHAPTER OUTLINE

15.1 Physical Aging in Late Adulthood
15.2 Health Risks in Late Adulthood
15.3 Cognition and Memory in Late Adulthood
15.4 Brain Disorders in Late Adulthood
15.5 Successful Physical and Cognitive Aging in Late Adulthood

WHAT DOES PSYCHOLOGY SAY? Harold is seventy years old and recently retired from a long career running his family's café. Over his working years, he saw many long-time patrons move from middle to late adulthood and begin to deal with a variety of health problems. Now he is fully aware that he too is an older adult. Still, he doesn't really feel "old." Aside from a few stiff joints and some minor aches and pains, he feels like his regular self. He is, however, slightly concerned about his cognitive ability. He has always been a bit absent-minded, but recently any time he has misplaced something or had a memory lapse, he has wondered whether this is just occasional forgetfulness or a sign of more serious things to come.

Harold's retirement has gotten him thinking about how the next phase of life will go. Even though he has some idea of the changes to expect, he also knows life is unpredictable. He's aware of medical conditions that run in his family, like glaucoma, high blood pressure, and Alzheimer's disease, and he hopes he'll be able to identify and get treatment for these things early if he develops them himself. He resolves to stay on top of his medical appointments and continue to get regular checkups. Harold wants to live long, but he also wants to be healthy

while doing so. He has several questions on his mind:

- How long can he maintain his good health?
- Will he notice slow and gradual declines in his physical or mental abilities, or will sudden health events drastically change his life?
- Should he be concerned about forgetting little things now that he is older?
- Most of all, he thinks about the rest of his life and how long it might last. Could he have twenty or even thirty years ahead of him?

This chapter describes research that examines changes to the physical body, health, cognitive ability, and abnormal cognitive declines in late adulthood.

15.1 Physical Aging in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

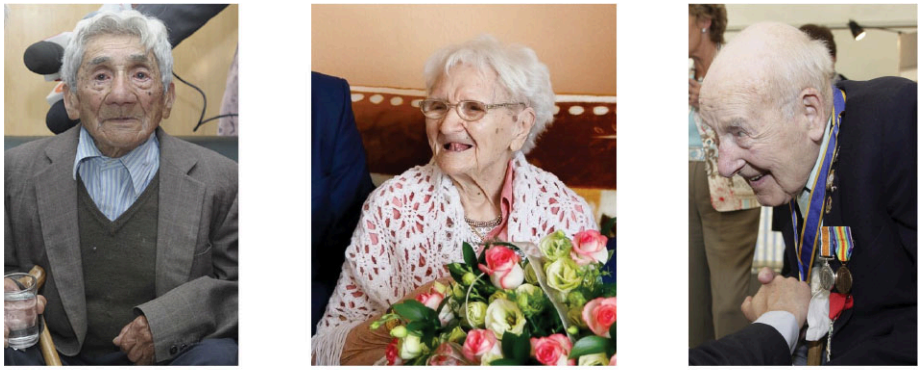
- Understand reasons behind variation in life expectancy
- Explain the major theories about the physical aging process
- Describe the physical changes that occur in late adulthood
- Identify key changes in the brain during late adulthood

Myra has reached a significant milestone, her ninety-first birthday. She celebrated it with her children, who are in their late sixties, her middle-aged grandchildren, her great-grandchildren (who range from adolescents to emerging adults), and one great-great-grandchild (a particularly rambunctious toddler). Myra's family is a snapshot of most of the stages of the human lifespan. As her loved ones revisit over family photos and videos, they smile and joke about the physical changes they see in each other today compared to the images from twenty or forty or sixty years ago.

This section on physical aging in late adulthood covers the ways the many different systems in our bodies physically change with time, including muscular, skeletal, sensory, nervous, respiratory, and cardiovascular systems. Research on life expectancy as well as theories about how and why people experience changes in later life help us to understand these processes.

Life Expectancy

Human beings know that life does not last forever (Figure 15.2). Having passed through infancy, childhood, adolescence, plus early, emerging and middle adulthood, everyone will experience late adulthood with declines in physical ability and health, eventually resulting in death. These changes may sound stark, but there are many reasons for optimism.



(a) (b) (c)

FIGURE 15.2 Some individuals live for well over 100 years. Among them have been (from left to right): (a) Don Celino Villanueva of Chile, who lived to be 121 years old; (b) Tekla Juniewicz of Poland, who died at 116 years of age; and (c) Henry Allingham of the United Kingdom, who was 114 years old. (credit a: modification of work

"28-12-2011 Don Celino Villanueva (cropped)" by tu Foto con el Presidente/Wikimedia Commons, CC BY 2.0; credit b: modification of work "Spotkanie z najstarszą Polką (48440088871) (cropped)" by Kancelaria Premiera/Wikimedia Commons, CC0 1.0; credit c: modification of work "Henry Allingham in June 2006" by Simon Hughes/Wikimedia Commons, Public Domain)

Research studying human longevity or life expectancy—the average age to which members of a species or subpopulation within a species will live—has revealed consistent positive trends over a long period of time. In fact, average human life expectancy has been steadily increasing worldwide for the past 100 years, from 34.1 years in 1913 to 71.0 years today (Dattani et al., 2023). This dramatic jump is likely due to decreases in infant mortality, improved living conditions, improvements in both quality of and access to health care, preventive measures such as vaccinations, and improved knowledge of health and nutrition. The gap in life expectancy between wealthier regions, which have more resources and more access to health care, and poorer areas of the world has also decreased over time, although there is still variability. Australia/Oceania has the highest life expectancy of 79.4 years, and Africa has the lowest of 61.7 years (Dattani et al., 2023).[1]

In the United States, average life expectancy is around seventy-nine years, and women live six years longer than men on average. This tendency for women to live longer than men is also observed globally. A February 2020 report from the U.S. Census Bureau projected that life expectancy will likely continue to increase for the next forty years, surpassing eighty-five years by the year 2060 (Medina et al., 2020) (Figure 15.3). However, while projections are optimistic, future improvements in life expectancy are not guaranteed, and a variety of factors could influence them. For example, the COVID-19 pandemic was responsible for a global decline in life expectancy, ranging from 1 to 2.5 years (Arias et al., 2022; Dattani et al., 2023). Rising rates of obesity are also associated with lowered life expectancy in both developed and developing nations (Bansal & Jin, 2023).[2]

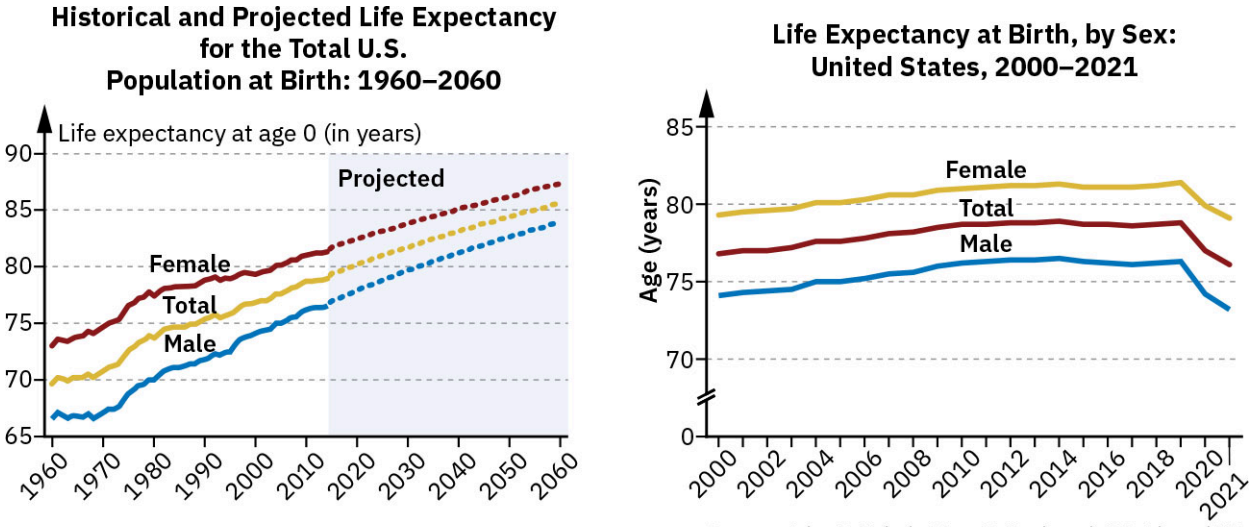


FIGURE 15.3 (a) U.S. Census data prior to 2020 show increases in average life expectancy in the United States since 1960 and projections for continued increases until at least 2060. (b) More recent data show a decline in life expectancy, largely believed to be due to the COVID-19 pandemic. (data source a: U.S. Census Bureau; data source b: Center for Disease Control and Prevention; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Researchers also find variations in life expectancy within regions and populations in the same country. For

1 This study "Dattani et al., 2023) uses the terms "wealthy" and "poor."
2 This study (Bansal & Jin, 2023) uses the terms "developed" and "developing."

example, in the United States, the highest-income individuals tend to live more than fourteen years longer than the lowest-income individuals (Chetty et al., 2016), and differences based on race and ethnicity are observed. Socioeconomic status accounts for most of the observed racial and ethnic differences in longevity (For the Health ABC Study, 2012). Group differences in financial stability, housing and neighborhood factors, education, community support and safety, health insurance, and access to healthy food and high-quality health care all likely contribute (Kaiser Family Foundation, 2023).

Some trends in the data are more difficult to interpret, however. In the United States, while Black residents have the lowest life expectancy at birth, this gap tends to narrow over the lifespan. After surviving to age eighty years, Black Americans tend to live longer than White Americans. This suggests that although Black Americans are disadvantaged in terms of life expectancy for much of the lifespan, those who reach advanced age may be more resilient than most. Hispanic Americans, in contrast, tend to have longer life expectancies across the entire life span (Arias & Xu, 2020). Understanding these group differences requires analyzing more factors than just socioeconomic status, such as lifestyle differences and genetic risk. National research on people of Asian and American Indian/Alaska Native heritage has only begun being collected in the last few years, with preliminary data showing the highest life expectancy for Asian Americans and the lowest for AI/AN (Arias et al., 2022).

LINK TO LEARNING

Use the Lifespan Calculator (https://openstax.org/r/104LifespanCalc) to predict your life expectancy.

Types and Theories of Aging

Researchers have identified different types of aging based on whether the process is typical or accelerated by disease or environmental influences. The most fundamental type of aging is **primary aging**, the natural process that has not been accelerated or worsened as a result of disease. Among its characteristics are subtle declines in processing speed and working memory and weakening of the skeletal and muscular systems (Birren & Cunningham, 1985; Othman et al., 2022).

Interventions in primary aging would slow the aging process, but little progress to achieve this has been made. Most interventions have instead focused on preventive measures to improve health, allowing individuals to remain in primary aging while delaying issues that would lead to secondary or tertiary aging (Barnes et al., 2021; Cartee et al., 2016; Cornelissen & Otsuka, 2017).

Next, **secondary aging** is accelerated and worsened by disease processes, lifestyle choices, or environmental factors (Birren & Cunningham, 1985; Othman et al., 2022). Rapid cognitive decline as a result of any form of dementia is an example of secondary aging, as are health problems resulting from a poor diet, a sedentary lifestyle, exposure to pollutants, and inadequate access to health care and other resources. This type of aging has been the largest focus of interventional efforts, including medical treatments to slow or reverse disease processes, lifestyle interventions to improve health, and social programs such as Medicaid/Medicare to open access to health-care resources.

Finally, **tertiary aging** describes the more rapid and general declines that may occur in the months and years prior to death (Birren & Cunningham, 1985; Othman et al., 2022). Examples include loss of mobility and **terminal decline**, the accelerated and nonnormative declines in cognitive ability that can occur one to five years before death (Hülür et al., 2016; Wilson et al., 2020).

Theories of aging are researched and refined based on studies in genetics, biochemistry, and human and animal studies. These theories are continually evolving, and do not paint a conclusive, universal picture. Many researchers recognize that causes of ages may vary and combine in the overall process of getting older and the development of age-related and other conditions. For example, the free radical theory, described below, may explain the development of certain conditions, but not others; it may be a definite cause of aging, but not a

universal cause for all aging.

Hormonal Stress Theory

Some theories and research on aging focus on the diseases and health problems that become more common in later years. One such theory, the **hormonal stress theory of aging** (also called neuroendocrine theory) (Sapolsky, 1992), proposes that as people get older, stress hormones such as cortisol tend to stay elevated longer after a stressful response than they do at younger ages (Figure 15.4). These hormones have been positively correlated with hypertension, diabetes, cognitive decline, and cardiovascular disease (Novais et al., 2017; Thayer et al., 2021; Yiallouris et al., 2019). It's therefore plausible that age-related increases in exposure to stress hormones could contribute to many of the health problems typically associated with age.

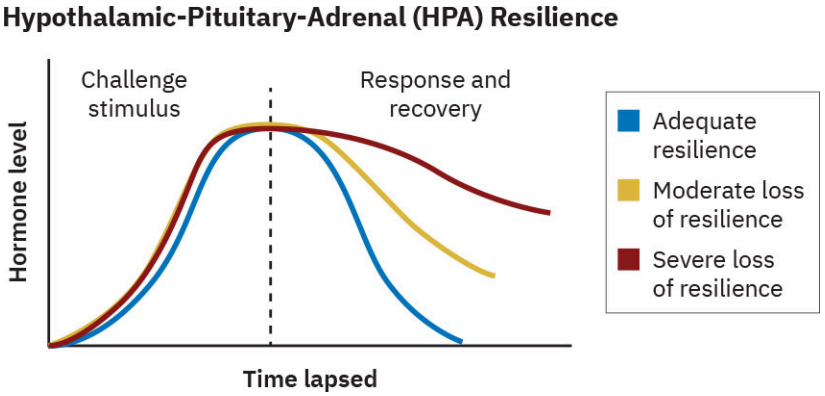


FIGURE 15.4 As age increases, stress hormones stay elevated for longer periods of time following a stressful response. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

While stress hormones have short-term benefits, such as preparing the body for fight-or flight responses, research has shown that chronic exposure can have a direct negative effect on the health of many bodily systems. For example, cortisol alone has been linked to a variety of health issues, including depression, obesity, fatigue, cardiovascular health, and inflammation. These hormones may also lead to unhealthy behavioral responses, such as losing sleep or overeating during stressful times (O'Connor et al., 2021). Having a history of adverse childhood experiences is also associated with increased risk of negative health outcomes in adulthood, including cardiovascular disease, dementia, and depression (Dagnino et al., 2020; Godoy et al., 2021; Merrick et al., 2019; Tani et al., 2020).

Free Radical Theory

The **free radical theory** focuses on free radicals, unstable oxygen molecules that are a by-product of metabolizing the food we eat. Because they try to bond with other atoms or molecules to become stable, free radicals can cause small amounts of physical damage to tissues or cells as they attempt to stabilize (Ziada et al., 2020).

The free radical theory suggests that this damage accumulates as people age, eventually resulting in many of the health problems associated with aging. Some believe we may be able to minimize free radical damage by increasing the intake of antioxidants, substances naturally produced in the body and also common in many fruits and vegetables. Although some research supports the free radical theory, particularly with regard to specific conditions like cancer and heart disease, other studies have contradicted it; research on antioxidants so far is less conclusive (Aversa et al., 2016; Jomova et al., 2023; Ziada et al., 2020).

Cellular Clock Theory

The **cellular clock theory** suggests that cells can divide to reproduce themselves only a limited number of times. As they reach this number, the body is no longer able to replace old or damaged cells with new ones, theoretically resulting in many of the diseases and declines associated with aging. This idea was first

developed by Leonard Hayflick, who discovered that cells could typically divide around forty to sixty times before cell division stops, a constraint sometimes referred to as "the Hayflick limit." Hayflick suggested that some mechanism in the cell operated as a clock that eventually stopped future divisions (Hayflick, 1977). The idea has led many researchers to conclude that, unless lifespan extending interventions are developed, the maximum human lifespan is around 122 years (Blagosklonny, 2021).

What sort of mechanism would act as such a clock? Eventually, a potential answer has been found in telomeres. A **telomere** is the strand of DNA on the tip of each chromosome. Telomeres protect DNA, somewhat like the ends on shoelaces that keep them from unraveling. However, telomeres become shorter each time a cell divides, eventually becoming too short to serve their protective role, so the cell's ability to divide ends (Shay & Wright, 2000).

LINK TO LEARNING

Watch this brief video about telomeres (https://openstax.org/r/104Telomeres) to learn more about how and why they work.

One compelling bit of evidence supporting the cellular clock theory exists in a rare genetic condition called progeria, affecting around one in four million individuals (Figure 15.5). Progeria causes young children to develop many health problems and features typically associated with age, such as hair loss, joint problems, heart problems, fatigue, and shortness of breath. The skin and facial features also resemble those of older individuals, and the life expectancy of affected individuals is typically twelve to thirteen years (Hennekam, 2006). One of the characteristics of this condition is shorter-than-typical telomeres (Allsopp et al., 1992; Decker et al., 2009), providing strong evidence that telomeres play a role in the normal physical aging process.

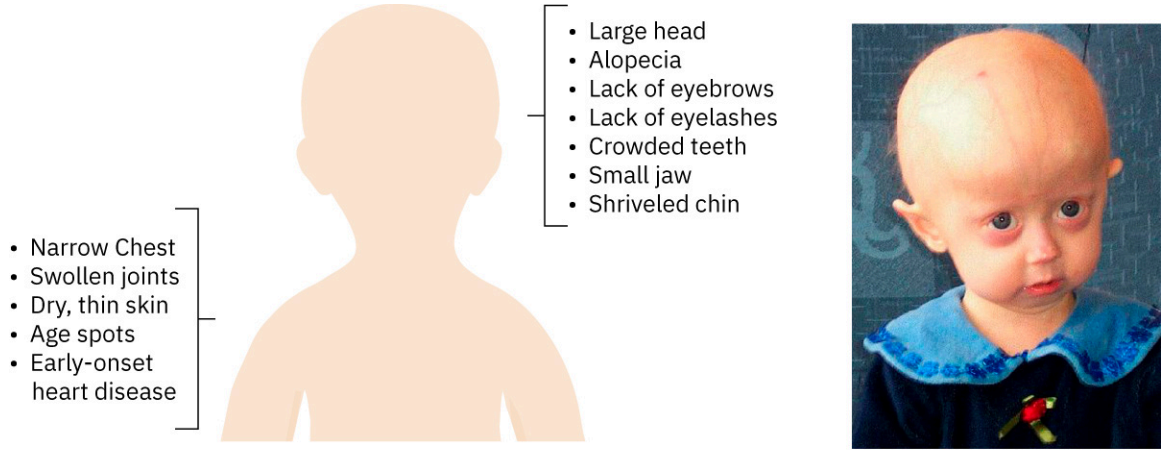


FIGURE 15.5 In addition to displaying many typical signs of aging, such as stiff joints, children with progeria may also show other physical symptoms, such as a small jaw and a short stature. (credit a: modification of work "Female repr system ru svg" by "Trudoholic"/Wikimedia Commons, CC0 1.0; credit b: modification of work "Hutchinson-Gilford Progeria Syndrome" by Public Library of Science/Wikimedia Commons, CC BY 2.5)

Wear and Tear Theory

Another theory takes a more global and environmental look at physical aging. The **wear and tear theory** suggests that the use of our bodies results in unrepaired damage that accumulates over time, resulting in aging. However, the idea does not account for the body's ability to repair and fix damage throughout life (Lipsky & King, 2015), and research does not provide strong support for this theory. In fact, more active humans (and other species) generally tend to be healthier and live longer, suggesting that the more we use our bodies, the longer they last (Mitteldorf, 2010; Sattaur et al., 2020).

Still, some research has suggested that although wear and tear may not explain the aging process overall, it could explain some age-related experiences. For example, athletes who engage in intense levels of activity might be at greater risk for joint problems later in life (Davies et al., 2019). Thus, it's plausible that joint problems in later life could at least partly be predicted by extreme use and damage, consistent with the wear and tear theory.

Genetic Variability

Other research has focused on the idea that genes may play a role in physical and biological aging. Part of this idea is based on knowledge about diseases that have a genetic component, such as breast cancer, coronary artery disease, and Huntingon's disease. Inheriting a genetic tendency for one of these conditions can affect a person's life expectancy and how well they maintain functioning with age. However, many research studies suggest that just the longevity of close relatives can be predictive of your own life expectancy. One such study demonstrated, in a very large sample of over 20,000 individuals, that having close relatives who survived to the top tenth percentile in longevity was strongly associated with living longer. This relationship did not exist for relatives who were not genetically related, such as spouses and in-laws, suggesting the relationship is largely genetic and not due to shared environments and lifestyles (van den Berg et al., 2019). Some evidence exists that variations in several specific genes, such as the APOE gene, are associated with longevity (MedlinePlus, 2022). Table 15.1 summarizes possible causes of biological aging.

Possible Cause	Description	Overview
Hormonal stress	Levels of hormones such as cortisol stay elevated longer with increasing age, resulting in greater exposure as we get older.	This theory identifies factors that contribute to life-threatening conditions such as heart failure in later life.
Free radicals	Unstable molecules called free radicals cause damage that accumulates over the lifespan, resulting in many problems associated with aging.	Some research suggests that free radical damage could be a factor in some age-related declines.
Cellular clock	Cells are limited in their ability to divide due to shrinkage of protective telomeres over time. When they can no longer replace themselves, age-related declines result.	This theory has a great deal of support, including conditions such as progeria, in which short telomeres at birth result in a short life expectancy and the presence in childhood of many health problems typically seen in later life.
Wear and tear	The accumulation of unrepaired damage to the body over the lifespan results in the body eventually wearing out.	The body repairs most damage due to injury or use. The theory may, however, effectively predict late-age joint problems from extreme use and damage earlier in life.
Genetic variability	Certain alleles inherited from relatives may affect how long we live.	Some conditions associated with shorter life expectancy, like coronary artery disease, may be inherited. Also, there may be specific genes associated with longevity.

TABLE 15.1 Possible Causes of Biological Aging

Changes in the Body

So far, you've learned about theories attempting to understand and describe the physical aging process. The

physiological changes during late adulthood affect various areas of the body. Changes in muscle and bone can affect mobility. Sensory abilities in vision and hearing may change. The appearance of skin and hair often show signs of aging, and internally, aging can affect organs like the heart and bladder, and also result in changes within the brain.

LINK TO LEARNING

Are you ageist? Take this quiz on ageism (https://openstax.org/r/104AgeistQuiz) and learn more about the types of ageism and how they may impact you.

Musculoskeletal Changes and Mobility

The skeletal system is maintained by processes that create new bone tissue while removing old, maintaining bone density for most of the life span with the help of the sex hormones testosterone and estrogen. As levels of these hormones decline with age, however, so does our ability to maintain bone density (Chan & Duque, 2002; Dines & Garovic, 2024). This is especially problematic for women, who experience a large drop in estrogen following menopause (Bonnick, 2006). A condition characterized by extensive loss of bone mass and weakening of the bones, called **osteoporosis**, is therefore much more common in women than men. Among individuals over age sixty-five years, 27.1 percent of women have osteoporosis compared to 5.7 percent of men (Sarafrazi et al., 2021). Research suggests that the best ways to prevent osteoporosis are to eat a healthy diet with plenty of calcium, vitamin D, and protein; to exercise regularly (Figure 15.6), especially doing weight-bearing exercise; and to limit smoking and alcohol consumption (National Institute on Aging, 2022).

FIGURE 15.6 In addition to a healthy diet and lifestyle, exercise can improve bone health and muscle mass and decrease the risk of osteoporosis in later life. These adults are practicing tai chi. (credit: modification of work "'TAI-CHI' exercises performed early mornings in Malacca" by Rudolph A. Furtado/Wikimedia Commons, Public Domain)

While osteoporosis is a loss of bone mass, **sarcopenia** is a loss of muscle mass that also occurs later in life. Generally, adults can expect to lose around 3 to 8 percent of muscle mass per decade after age thirty years. While this gradual decline is not very noticeable, it does accelerate after age sixty years (Volpi et al., 2004). Getting plenty of exercise including aerobic exercise and resistance training, consuming adequate amounts of protein, and maintaining adequate caloric intake have all been associated with decreasing age-related muscle loss. Research has shown that weight-training programs significantly increased strength and muscle power, even among individuals ages ninety years and older (Cadore et al., 2014). Other studies have demonstrated similar benefits for yoga, which has the added benefit of increasing flexibility (Green et al., 2019; Jeter et al., 2014). Research such as this suggests that while muscle loss is normative in later years, it is also reversible, and even the oldest individuals can gain strength and muscle with intentional efforts.

The loss of both muscle and bone mass can be a problematic combination. Weaker bones and muscles can hinder the ability to walk and increase the chance of falling. With less muscle protecting weaker bones, falls are more likely to result in fractures and other serious injuries (Colón et al., 2018). Additionally, weakened bones can actually break and cause a fall (Hamdy, 2017). An older adult may need to be inactive for many weeks while a broken bone heals, and inactivity can accelerate losses in both muscle and bone mass, making it more difficult to regain mobility after recovery. Weight-training and yoga interventions have been found to improve balance and reduce the risk of falling in addition to increasing muscle and bone mass and flexibility (Cadore et al., 2014; Green et al., 2019; Jeter et al., 2014).

Sensory Changes

Decline in visual acuity, the extent to which we can see clearly at a distance, typically begins in middle adulthood when the lens in the eye stiffens (Sjöstrand et al., 2011). As a result, many individuals who never had vision problems eventually need corrective eyewear. It is also typical to struggle to see things at close range as we age. This condition, called **presbyopia**, requires many middle-aged and older adults to use reading glasses.

Another eye condition that becomes common with age is the development of **cataract**s, cloudy areas on the typically clear lens of the eye caused by a buildup of protein. Cataracts result in blurry, less clear vision and impaired color vision, but they can be successfully treated with outpatient surgery (Figure 15.7). The condition **age-related macular degeneration** is characterized by blurring and potential loss of vision in the center of the field of vision as a result of damage to the **macula**, the central part of the retina. Peripheral vision is typically maintained. Much less common than cataracts, macular degeneration is more difficult to treat and is the leading cause of severe vision loss later in life. While there is no cure, some forms can be medically treated with injections (American Optometric Association, n.d.; Ashraf & Souka,2017; Hernández-Zimbrón et al., 2018).

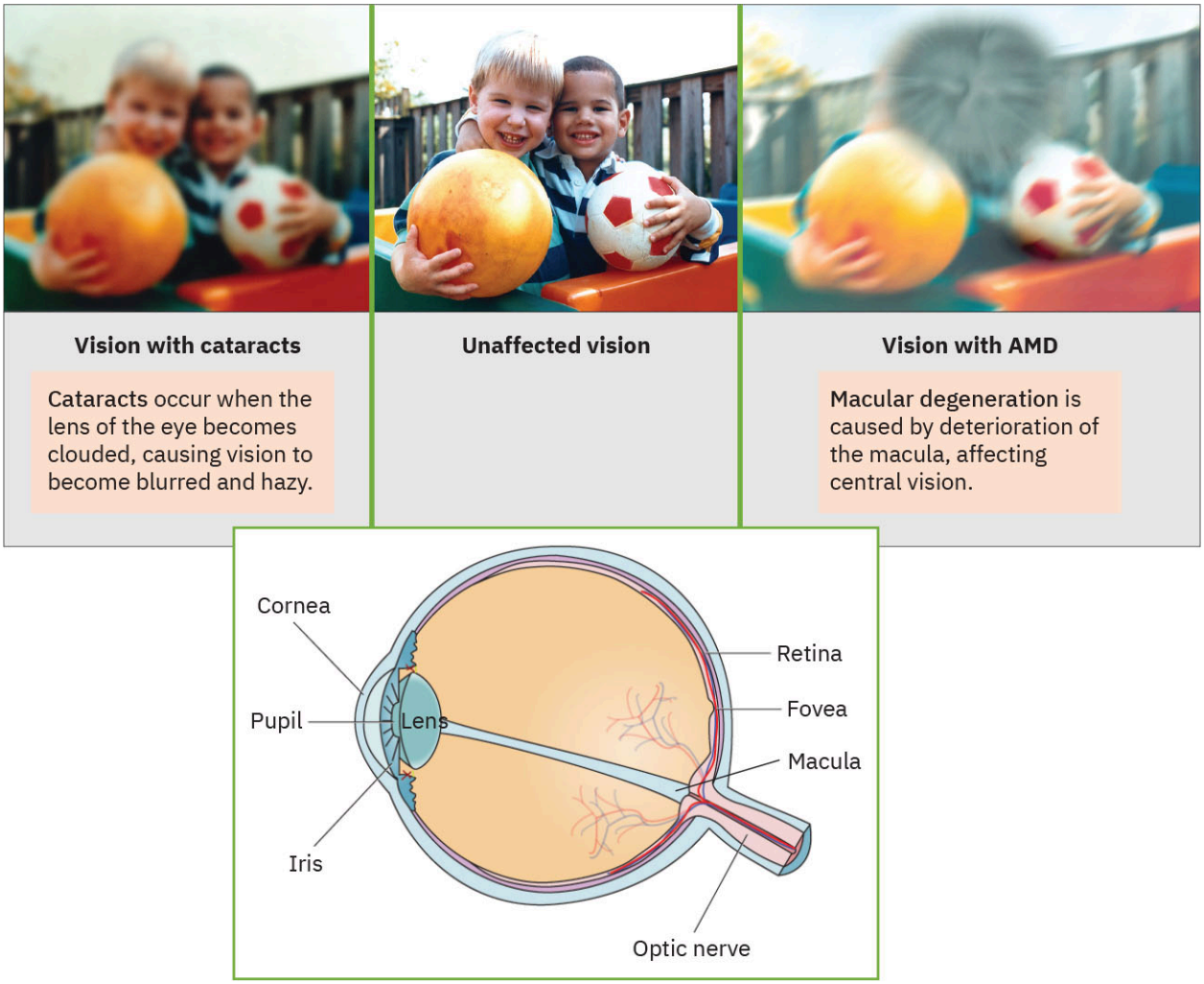


FIGURE 15.7 The top images show how vision is affected by cataracts and by macular degeneration. The bottom illustration shows the parts of the eye affected by each condition. (credit top left: modification of work "Eye disease simulation, cataract" by National Eye Institute, National Institutes of Health/Wikimedia Commons, Public Domain; credit top middle: modification of work "Eye disease simulation, normal vision" by National Eye Institute, National Institutes of Health/Wikimedia Commons, Public Domain; credit top right: modification of work "Eye disease simulation, age-related macular degeneration" by National Eye Institute, National Institutes of Health/Wikimedia Commons, Public Domain; credit bottom: attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Another condition common in later life, **glaucoma**, is typically associated with increased pressure inside the eye and resulting damage to the optic nerve, which can bring about permanent vision loss if not treated (Casson et al., 2012). This vision loss takes the form of "tunnel vision," in which central vision is unaffected but peripheral vision is damaged (Figure 15.8). While some forms are genetic, most cases of glaucoma are difficult to predict and have been associated with environmental factors such as smoking. Generally, the risk increases considerably after age sixty years, although people with a family history of glaucoma or other risk factors can experience the disorder at much earlier ages, even in childhood (Doucette et al., 2015). Treatment typically consists of medicated eye drops and, if needed, surgery (Weinreb et al., 2014).

(a) (b)

FIGURE 15.8 Glaucoma results in damaged peripheral vision. (credit a and b: modification of work "Eye disease simulation, glaucoma" by National Institutes of Health/Wikimedia Commons, Public Domain)

Another vision-related condition common in advanced age is **dry eye syndrome**, which occurs when eyes don't produce enough tears. This is a primary aging change but can also be affected by hormonal changes, medications, and high blood pressure. Dry eye syndrome affects 20 percent of people over the age of eighty years (Sharma & Hindman, 2014). While it does not typically result in structural damage, it is still problematic because it has been associated with occasional blurry vision, pain, and sleep disturbances (Guo & Akpek, 2020).

Hearing also undergoes normative declines associated with age, called **presbycusis**. Presbycusis is not an overall decrease in the volume at which we hear sound in the environment. Instead, the ability to hear high-pitched tones is affected first (Huang & Tang, 2010). Many factors, including genetics, may play a role in its severity, but one of the most common predictors of hearing loss in older age is repeated or extreme exposure to loud noise throughout life (Huang & Tang, 2010). This type of hearing loss can also occur at younger ages when there is a lot of exposure to loud noise. A sample of seventeen-year-olds provided self-reported data about hearing issues, had objective hearing tests, and reported their music-listening behaviors with earbuds. Those who listened for longer durations and at louder volumes had more self-reported hearing problems and scored lower on hearing tests, even at their young age (Widén et al., 2017).

More recent data indicate that approximately one billion people between the ages of twelve and thirty-four years are at risk of hearing loss caused by listening to music at unsafe levels, either through devices like earbuds or at loud venues like concerts or clubs, and that this hearing loss is not only permanent but also accelerates late-life hearing loss (Dillard et al., 2022). Similar patterns are noted for people who spend a lot of time playing video games (Dillard et al., 2024). This research demonstrates not only that hearing loss can start much earlier in life but also that damage accumulates over time.

LIFE HACKS

Assessing and Protecting Your Hearing

As you read about the damage that listening to loud music can do to your hearing, did you find yourself thinking about your own listening habits as well as other noise exposure in your own life? If you have serious concerns about your hearing, you should be tested by a professional. Still, there are ways to get a general indication about whether you have experienced any age-related hearing loss, even at a young age.

You can find online hearing tests that play high-pitched tones of different frequencies that represent what can typically be heard by those under twenty-four, under thirty, under forty, and under fifty years of age. If you find yourself unable to hear the pitches typically heard among your age group, it could be an indication that you have experienced more age-related hearing loss than is typical for your age. If you continue on this trajectory, you may

experience more hearing loss and at a younger age than most.

While this type of hearing loss is permanent, you can do things to minimize future loss, such as listening to music at lower volumes, wearing earplugs when attending loud concerts or clubs, and generally reducing your exposure to loud noise.

You can also use technology to measure your exposure to loud noises. If you have an Apple Watch, you can download the Noise App, which measures the sound levels in your environment and notifies you if it's getting dangerously loud. The National Institute for Occupational Safety and Health Sound Level Meter App is similar, and available for iPhones. Apps for Android poducts are also available. If you have an iPhone or Apple Watch and want to participate in research that helps further understanding of noise exposure and hearing, the University of Michigan Apple Hearing Study is an interesting option where you can also learn more about your own exposure to sound and how it may be affecting your health.

Gender is also correlated with hearing loss in later life. On average, men have more hearing loss than women, a result believed to be partially related to hormonal differences and possibly even differences in the functioning of the cochlea, a snail-shaped fluid-filled chamber in the inner ear that transforms sound vibrations into electrical impulses sent to the brain for interpretation (Nolan, 2020). But this tendency varies across cultures, suggesting that it is also influenced by lifestyle and work-related differences in exposure to loud noise; men are more likely to work in noisy settings such as construction and more likely to engage in behaviors such as smoking that are associated with increased hearing loss (Cornelius et al., 2022; Jung et al., 2024; von Gablenz et al., 2020). Older adults who have avoided loud noise throughout their lives may experience only subtle declines.

Other age-related changes in the ear are not hearing related. A condition called **vertigo** causes dizziness or the sensation of moving when still. Vertigo is experienced in 30 percent of those sixty years of age and older (Fernández et al., 2015). It can have multiple causes, the most common being a buildup of calcium crystals in the ear canal. Treatments depend on the cause and severity and include medications and the Epley maneuver, a series of head movements intended to relocate the calcium deposits (Dommaraju & Perera, 2016).

Many issues unrelated to age, such as allergies, COVID-19, colds, and the flu, can result in short-term losses of smell and taste. Still, some age-related declines in these senses do occur, and while they're not dangerous, they can lead to problems like reduced enjoyment of food. Older adults who take less pleasure in food may eat less and can develop unintended weight loss and malnutrition (National Institute on Aging, 2020).

Research findings about changes in the sense of touch have been inconsistent, but sensitivity to pain, temperature, and vibration does tend to decline with age (Wickremaratchi & Llewelyn, 2006). However, older adults are much more likely to report chronic or long-lasting pain as a serious problem that limits their functioning, quality of life, and social involvement. These reports are likely due to the increased prevalence of conditions, especially muscular and skeletal issues such as arthritis and sciatica, that contribute to joint, neck, and back discomfort (Domenichiello & Ramsden, 2019).

Skin and Hair Changes

Other physical changes include the aging of the skin, which becomes thinner and drier and loses elasticity and fat, making wrinkles more common. Injuries such as bruises and cuts can appear more pronounced and take longer to heal as we get older. Age spots and even skin cancer can also become more common.

Some changes are inevitable. Yet there is a great deal of diversity in the extent to which people experience age-related changes in the skin, some of which is strongly linked to environmental exposure throughout the lifespan. Skin dryness can be prevented by staying hydrated, applying moisturizers, and avoiding very dry climates, but the most influential factor in keeping your skin looking healthy and avoiding problems such as wrinkles, skin cancer, and age spots is to limit sun exposure throughout your life (Figure 15.9). This means

consistently using sunscreen, wearing ultraviolet-protective clothing, and avoiding suntanning and sunburns (National Institute on Aging, 2017).

FIGURE 15.9 Exposure to the sun, especially without sunscreen, can accelerate aging of the skin. (credit: modification of work "Beach Couple" by Nick Page/Flickr, CC BY 2.0)

As you may guess, the two most prominent age-related changes to hair are thinning and graying. Graying is due to a loss of melanin production in the hair follicle. Both genetic factors and racial differences play a part. For example, the onset of graying typically ranges from the midthirties for White individuals to the mid-forties for Black individuals. Some environmental factors, such as sun exposure, contribute as well (Maymone et al., 2021). Hair loss is also thought to be strongly genetic. While both men and women can experience thinning hair with age, it is more common and severe among men, with 60 percent of men over age thirty years reporting hair loss. Men whose fathers and maternal grandfathers experienced hair loss are at the greatest risk. Regardless of family history, the risk of hair loss increases with age. (Chumlea et al., 2004).

Heart, Lung, and Bladder Changes

Less visually obvious are physical changes to the cardiovascular system, including stiffening and hardening of the arteries, which results in increasing rates of hypertension (high blood pressure). Plaque buildup inside the artery walls, often the product of a high-cholesterol diet, also increases with age and can limit blood flow. Problems such as these can damage and weaken the heart, potentially leading to heart failure (National Institute on Aging, 2018). In the United States, heart disease is the most common cause of death for people over age forty-five years, and the percentage of deaths from heart disease increases with age (Xu et al., 2021).

Men and women sometimes have different symptoms of heart disease; for example, women having a heart attack are more likely than men to have symptoms such as nausea and jaw pain without any chest pain (Lichtman et al., 2018), meaning that they often wait longer to get treatment and are likely to experience more heart damage as a result. Monitoring blood pressure and cholesterol, eating a healthy diet, and engaging in cardiovascular exercise are all important factors in maintaining a healthy cardiovascular system.

The efficiency of the respiratory system tends to peak around our midtwenties and then slowly declines (Sharma & Goodwin, 2006). Not noticeable for much of adulthood, these declines become more consequential in later life. For example, bone loss can make the ribs less elastic and less capable of expanding and contracting as we breathe. Combined with other changes in the lungs, this loss decreases lung capacity as we age (American Lung Association, 2023). Coughs also become weaker, limiting the ability to clear unwanted particles from the lungs (Lowery et al., 2013). The lungs are also more susceptible to infections such as the flu, COVID-19, and pneumonia, which can develop into more serious conditions in older adults due to the declining functioning of the immune system (American Lung Association, 2023).

Another physical change relates to the bladder and bladder control. Urinary incontinence can occur at any age but becomes increasingly common in later life. It is a product of urinary muscles not working appropriately due to a variety of reasons, such as weakening muscles, overactive bladder muscles, damage associated with chronic health problems, and the shifting of organs around the bladder. Incontinence can be more common among men, who may also experience inflammation or enlargement of the prostate. Medical treatment and behavioral options such as pelvic muscle/Kegel exercises are available, depending on the cause of the incontinence (National Institute on Aging, 2022).

Sleep Changes

The amount of sleep recommended and the average amount of sleep attained both decrease across the lifespan. Older adults should get about 7 to 8 hours of sleep per night (Chaput et al., 2018). Since circadian rhythms shift forward as we age, most people find themselves going to bed earlier and waking up earlier than when they were younger (Newsom & DeBanto, 2023). Chronic pain, dementia, and other health problems can bring sleeping challenges for older adults. Around half of older adults report frequent sleep problems, such as difficulty falling asleep and increased sleep disturbances after falling asleep. These problems have been positively correlated with mortality, increased risk of falls and other accidents, and declines in cognitive functioning (Crowly, 2011; Sivertsen et al., 2021).

Changes in the Brain

The brain undergoes several normative changes as we age. After the age of forty years, its volume decreases by 5 percent every ten years, a decline that may speed up after age seventy years and that seems more pronounced in men than women. While this decreasing volume likely has many contributing factors, it may be due to shrinking neurons, fewer synapses, and decreases in the volume of blood in the brain than to actual cell death (Peters, 2006; Sele et al., 2021).

The brain's cortex, responsible for cognitive processes such as memory, problem-solving, and decision-making, is also growing thinner. Recent research suggests the process begins around the age of four years (Fjell et al., 2015), so thinning later in life continues a trend that has lasted most of the lifespan. This thinning trend may sound like a negative change, but much of it is associated with lifelong synaptic pruning, in which the brain gets rid of synapses and neurons that are no longer needed, thereby increasing its efficiency in processing information. Still, some research suggests that an accelerated thinning of the cortex can be associated with decreased cognitive ability (Fjell et al., 2015; Shaw et al., 2016).

Another factor contributing to decreasing brain volume is the loss of white matter. White matter is the inner portion of the brain, which consists of millions of axons, each covered with a fatty myelin sheath, giving a white appearance. While white matter was historically thought to be unimportant in brain function, it is now believed to allow different regions of the brain to communicate and may also play a role in learning (Fields, 2008). While the myelin on neurons continues to develop until the midtwenties, it then becomes relatively stable before starting to deteriorate after the age of forty years (Peters, 2006).

The loss of myelin may have more implications than reducing brain volume. The primary purpose of myelin on nerve cells is to insulate the axon, resulting in increases in speed and efficiency of the neuron. Research has found that the slowing of the brain in later life, seen in lower processing speed, for instance, can be accounted for by age-related declines in white matter (Kerchner et al., 2012).

Another change in the brain occurs in the hippocampi, the regions of the brain within each of the two temporal lobes that assist in the formation and retention of new memories. Structural changes occur that are associated with age-related memory declines (Yassa et al., 2011).

The brain also has mechanisms to preserve and assist its functioning despite these age-related changes. Neuroplasticity, or the brain's ability to change in response to challenges or new experiences, typically decreases with age (Calabrese et al., 2013; Sorrells et al., 2018), and for a long time, it was thought that

individuals developed only new synaptic connections, not new neurons, after birth. However, some research suggests the brain in later life is able to create new neurons, including in areas important for memory, like the hippocampus (Moreno-Jiménez et al., 2019). Some research examining neuroplasticity in older mice revealed that physical activity and exposure to an enriched environment resulted in the creation of new hippocampal neurons (Kempermann et al., 2002; Liu & Nusslock, 2018). Although these findings are specific to nonhuman animal research, they are consistent with research suggesting that older adults who live an active lifestyle with cognitive stimulation experience less cognitive decline and, in some cases, restoration of function following neurological impairment (Han et al., 2022; Stillman et al., 2020).

Other research has revealed increased functioning of the frontal lobes in some older adults. The frontal lobes are responsible for many of our higher-level cognitive processes, such as decision-making and planning. Older adults who have increased activity in the frontal cortex tend to perform better on cognitive tasks. This increase in frontal lobe activity could thus be an example of neuroplasticity compensating for other declines in brain function (Goh & Park, 2009).

References

Allsopp, R. C., Vaziri, H., Patterson, C., Goldstein, S., Younglai, E. V., Futcher, A. B., Greider, C. W., & Harley, C. B. (1992). Telomere length predicts replicative capacity of human fibroblasts. *Proceedings of the National Academy of Sciences of the United States of America*, *89*(21), 10114–10118. https://doi.org/10.1073/pnas.89.21.10114

American Lung Association. (2023). *Your aging lungs*. https://www.lung.org/blog/your-aging-lungs

American Optometric Association. (n.d.). Senior vision: Over 60 years of age. https://www.aoa.org/healthy-eyes/eye-health-for-life/senior-vision?sso=y

Arias, E., Tejada-Vera, B., Kochanek, K. D., & Ahmad, F. B. (2022). *Provisional life expectancy estimates for 2021. Vital Statistics Rapid Release; no 23*. National Center for Health Statistics. https://dx.doi.org/ 10.15620/cdc:118999

Arias, E., & Xu, J. (2020). United States life tables, 2018. *National Vital Statistics Reports: From the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System*, *69*(12), 1–45. https://pubmed.ncbi.nlm.nih.gov/33270553/

Ashraf, M., & Souka, A. (2017). Aflibercept in age-related macular degeneration: Evaluating its role as a primary therapeutic option. *Eye*, *31*(11), 1523–1536. https://doi.org/10.1038/eye.2017.81

Aversa, R., Petrescu, R. V. V., Apicella, A., & Petrescu, F. I. (2016). One can slow down the aging through antioxidants. *American Journal of Engineering and Applied Sciences, 9*(4), 1112–1126. https://doi.org/10.3844/ajeassp.2016.1112.1126

Bansal, S., & Jin, Y. (2023). Heterogeneous effects of obesity on life expectancy: A global perspective. *Annual Review of Resource Economics, 15*, 433–554. https://doi.org/10.1146/annurev-resource-022823-033521

Barnes, J. N., Pearson, A. G., Corkery, A. T., Eisenmann, N. A., & Miller, K. B. (2021). Exercise, arterial stiffness, and cerebral vascular function: Potential impact on brain health. *Journal of the International Neuropsychological Society, 27*(8), 761–775. https://doi.org/10.1017/S1355617721000394

Birren, J. E., & Cunningham, W. R. (1985). Research on the psychology of aging: Principles, concepts and theory. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the Psychology of Aging* (2nd ed.). Van Nostrand Reinhold Company.

Blagosklonny, M. V. (2021). No limit to maximal lifespan in humans: How to beat a 122-year-old record. *Oncoscience*, *8*, 110–119. https://doi.org/10.18632/oncoscience.547

Bonnick, S. L. (2006). Osteoporosis in men and women. *Clinical Cornerstone*, *8*(1), 28–39. https://doi.org/10.1016/s1098-3597(06)80063-3

Cadore, E. L., Casas-Herrero, A., Zambom-Ferraresi, F., Idoate, F., Millor, N., Gómez, M., Rodríguez-Mañas, L., & Izquierdo, M. (2014). Multicomponent exercises including muscle power training enhance muscle mass, power output, and functional outcomes in institutionalized frail nonagenarians. *AGE 36*, 773–785. https://doi.org/10.1007/s11357-013-9586-z

Calabrese, F., Guidotti, G., Racagni, G., & Riva, M. A. (2013). Reduced neuroplasticity in aged rats: A role for the neurotrophin brain-derived neurotrophic factor. *Neurobiology of Aging, 34*(12), 2768–2776. https://doi.org/10.1016/j.neurobiolaging.2013.06.014

Cartee, G. D., Hepple, R. T., Bamman, M. M., & Zierath, J. R. (2016). Exercise promotes healthy aging of skeletal muscle. *Cell Metabolism, 23*(6), 1034–1047. http://dx.doi.org/10.1016/j.cmet.2016.05.007

Casson, R. J., Chidlow, G., Wood, J. P. M., Crowston, J. G., & Goldberg, I. (2012). Definition of glaucoma: Clinical and experimental concepts. *Clinical and Experimental Ophthalmology*, *40*(4), 341–349. https://doi.org/10.1111/j.1442-9071.2012.02773.x

Chan, G., & Duque, G. (2002). Age-related bone loss: Old bone, new facts. *Gerontology*, *48*(2), 62–71. https://doi.org/10.1159/000048929

Chaput, J. P., Dutil, C., & Sampasa-Kanyinga, H. (2018). Sleeping hours: What is the ideal number and how does age impact this? *Nature and Science of Sleep*, *10*, 421–430. https://doi.org/10.2147/nss.s163071

Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., Bergeron, A., & Cutler, D. M. (2016). The Association between Income and Life Expectancy in the United States, 2001-2014. *JAMA*, *315*(16), 1750–1766. https://doi.org/10.1001/jama.2016.4226

Chumlea, W. C., Rhodes, T., Girman, C. J., Johnson-Levonas, A., Lilly, F. R. W., Wu, R., & Guo, S. S. (2004). Family history and risk of hair loss. *Dermatology*, *209*(1), 33–39. https://doi.org/10.1159/000078584

Colón, C. J. P., Molina-Vicenty, I. L., Frontera-Rodríguez, M., García-Ferré, A., Rivera, B. P., Cintrón-Vélez, G., & Frontera-Rodríguez, S. (2018). Muscle and bone mass loss in the elderly population: Advances in diagnosis and treatment. *Journal of Biomedicine*, *3*, 40–49. https://doi.org/10.7150/jbm.23390

Cornelissen, G., & Otsuka, K. (2017). Chronobiology of aging: A mini-review. *Gerontology, 63*(2), 118–128. https://doi.org/10.1159/000450945

Cornelius, M. E., Loretan, C. G., Wang, T. W., Jamal, A., & Homa, D. M. (2022). Tobacco product use among adults – United States, 2020. *Morbidity and Mortality Weekly Report, 71*(11), 397–405. https://doi.org/10.15585/mmwr.mm7111a1

Crowley, K. (2011). Sleep and sleep disorders in older adults. *Neuropsychology Review*, *21*, 41–53. https://doi.org/10.1007/s11065-010-9154-6

Dagnino, P., Ugarte, M. J., Morales, F., González, S., Saralegui, D., & Ehrenthal, J. C. (2020). Risk factors for adult depression: Adverse childhood experiences and personality functioning. *Frontiers in Psychology, 11*, 594698. https://doi.org/10.3389/fpsyg.2020.594698

Dattani, S, Rodés-Guirao, L, Ritchie, H., Ortiz-Ospina, E., & Roser, M. (2023). Life expectancy. OurWorldInData.org. https://ourworldindata.org/life-expectancy

Davies, M. A. M., Kerr, Z. Y., DeFreese, J. D., Arden, N. K., Marshall, S. W., Guskiewicz, K. M., Padua, D. A., & Pietrosimone, B. (2019). Prevalence of and risk factors for total hip and knee replacement in retired National Football League athletes. *American Journal of Sports Medicine*, *47*(12), 2863–2870. https://doi.org/10.1177/0363546519870804

Decker, M. L., Chavez, E., Vulto, I., & Lansdorp, P. M. (2009). Telomere length in Hutchinson-Gilford Progeria Syndrome. *Mechanisms of Ageing and Development*, *130*(6), 377–383. https://doi.org/10.1016/j.mad.2009.03.001

Dillard, L. K., Arunda, M. O., Lopez-Perez, L., Martinez, R. X., Jiménez, L., & Chadha, S. (2022). Prevalence and global estimates of unsafe listening practices in adolescents and young adults: A systematic review and meta-analysis. *BMJ Global Health, 7*, e010501. https://doi.org/10.1136/bmjgh-2022-010501

Dillard, L. K., Mulas, P., Der, C., Fu, X., & Chadha, S. (2024). Risk of sound-induced hearing loss from exposure to video gaming or esports: A systematic scoping review: *BMJ Public Health, 2*(1), e000253. https://doi.org/10.1136/bmjph-2023-000253

Dines, V. A., & Garovic, V. D. (2024). Menopause and chronic kidney disease. *Nature Reviews Nephrology*, *20*, 4–5. https://doi.org/10.1038/s41581-023-00717-w

Domenichiello, A. F., & Ramsden, C. E. (2019). The silent epidemic of chronic pain in older adults. *Progress in Neuro-psychopharmacology & Biological Psychiatry*, *93*, 284–290. https://doi.org/10.1016/j.pnpbp.2019.04.006

Dommaraju, S., & Perera, E. (2016). An approach to vertigo in general practice. *PubMed*, *45*(4), 190–194. https://pubmed.ncbi.nlm.nih.gov/27052132

Doucette, L. P., Rasnitsyn, A., Seifi, M., & Walter, M. A. (2015). The interactions of genes, age, and environment in glaucoma pathogenesis. *Survey of Ophthalmology*, *60*(4), 310–326. https://doi.org/10.1016/j.survophthal.2015.01.004

Fernández, L., Breinbauer, H. A., & Delano, P. H. (2015). Vertigo and dizziness in the elderly. *Frontiers in Neurology*, *6*. https://doi.org/10.3389/fneur.2015.00144

Fields, R. D. (2008). White matter in learning, cognition and psychiatric disorders. *Trends in Neurosciences*, *31*(7), 361–370. https://doi.org/10.1016/j.tins.2008.04.001

Fjell, A. M., Grydeland, H., Krogsrud, S. K., Amlien, I., Rohani, D. A., Ferschmann, L., Storsve, A. B., Tamnes, C. K., Sala-Llonch, R., Due-Tønnessen, P., Bjørnerud, A., Sølsnes, A. E., Håberg, A. K., Skranes, J., Bartsch, H., Chen, C.-H., Thompson, W. K., Panizzon, M. S., Kremen, W. S., . . . Walhovd, K. B. (2015). Development and aging of cortical thickness correspond to genetic organization patterns. *Proceedings of the National Academy of Sciences of the United States of America*, *112*(50), 15462–15467. https://doi.org/10.1073/pnas.1508831112
For the Health ABC Study. (2012). Racial differences in mortality in older adults: Factors beyond socioeconomic status. *Annals of Behavioral Medicine*, *43*(1), 29–38. https://doi.org/10.1007/s12160-011-9335-4
Godoy, L. C., Frankfurter, C., Cooper, M., Lay, C., Maunder, R., & Farkouh, M. E. (2021). Association of adverse childhood experiences with cardiovascular disease later in life: A review. *JAMA Cardiology, 6*(2), 228–235. https://doi.org/10.1001/jamacardio.2020.6050
Goh, J. O., & Park, D. C. (2009). Neuroplasticity and cognitive aging: The scaffolding theory of aging and cognition. *Restorative Neurology and Neuroscience*, *27*(5), 391–403. https://doi.org/10.3233/rnn-2009-0493
Green, E., Huynh, A., Broussard, L., Zunker, B., Matthews, J., Hilton, C. L., & Aranha, K. (2019). Systematic review of yoga and balance: Effect on adults with neuromuscular impairment. *The American Journal of Occupational Therapy, 73*(1), 7301205150p1-7301205150p11. https://doi.org/10.5014/ajot.2019.028944
Guo, L., & Akpek, E. K. (2020). The negative effects of dry eye disease on quality of life and visual function. *Turkish Journal of Medical Sciences*, *50*(10), 1611–1615. https://doi.org/10.3906/sag-2002-143
Hamdy, R. C. (2017). Fractures and repeated falls. *Journal of Clinical Densitometry, 20*(3), 425–431. https://doi.org/10.1016/j.jocd.2017.06.009
Han, Y., Yuan, M., Guo, Y.-S., Shen, X.-Y., Gao, Z.-K., & Bi, X. (2022). The role of enriched environment in neural development and repair. *Frontiers in Cellular Neuroscience, 16*, 890666. https://doi.org/10.3389/fncel.2022.890666
Hayflick, L., & Finch, C. E. (1977). The cellular basis for biological aging. *Handbook of the Biology of Aging*, 159–186.
Hennekam, R. C. M. (2006). Hutchinson–Gilford progeria syndrome: Review of the phenotype. *American Journal of Medical Genetics Part A, 140A*(23), 2603–2624. https://doi.org/10.1002/ajmg.a.31346
Hernández-Zimbrón, L. F., Zamora-Alvarado, R., Ochoa-De la Paz, L., Vélez-Montoya, R., Zenteno, E., Gulías-Cañizo, R., Quiróz-Mercado, H., & González-Salinas, R. (2018). Age-related macular degeneration: New paradigms for treatment and management of AMD. *Oxidative Medicine and Cellular Longevity*, *2018*, 1–14. https://doi.org/10.1155/2018/8374647
Hill, L., & Artiga, S. (2023, May 23). *What is driving widening racial disparities in life expectancy?* KFF. https://www.kff.org/racial-equity-and-health-policy/issue-brief/what-is-driving-widening-racial-disparities-in-life-expectancy/
Huang, Q., & Tang, J. (2010). Age-related hearing loss or presbycusis. *European Archives of Oto-rhino-laryngology*, *267*(8), 1179–1191. https://doi.org/10.1007/s00405-010-1270-7
Hülür, G., Ram, N., & Gerstorf, D. (2016). Terminal decline of function. In V. L. Bengtson & R. A. Settersten Jr. (Eds.), *Handbook of theories of aging* (3rd ed.). https://www.researchgate.net/profile/Gizem-Hueluer/publication/307628702_Terminal_decline_of_function/links/5d2df42e299bf1547cbc9390/Terminal-decline-of-function.pdf
Jeter, P. E., Nkodo, A.-F., Moonaz, S. H., & Dagnelie, G. (2014). A systematic review of yoga for balance in a healthy population. *Journal of Alternative and Complementary Medicine, 20*(4), 221–232. https://doi.org/10.1089/acm.2013.0378
Jomova, K., Raptova, R., Alomar, S. Y., Alwasel, S. H., Nepovimova, E., Kuca, K., & Valko, M. (2023). Reactive oxygen species, toxicity, oxidative stress, and antioxidants: Chronic diseases and aging. *Archives of Toxicology, 97*, 2499–2574. https://doi.org/10.1007/s00204-023-03562-9
Jung, S.-H., Lee, Y. C., Shivakumar, M., Kim, J., Yun, J.-S., Park, W.-Y., Won, H.-H., Penn Medicine Biobank, & Kim, D. (2024). Association between genetic risk and adherence to healthy lifestyle for developing age-related hearing loss. *BMC Medicine, 22*, 141. https://doi.org/10.1186/s12916-024-03364-5
Kaiser Family Foundation. (2023). *What is driving widening racial disparities in life expectancy?* https://www.kff.org/racial-equity-and-health-policy/issue-brief/what-is-driving-widening-racial-disparities-in-life-expectancy/
Kempermann, G., Gast, D., & Gage, F. H. (2002). Neuroplasticity in old age: Sustained fivefold induction of hippocampal neurogenesis by long-term environmental enrichment. *Annals of Neurology*, *52*(2), 135–143. https://doi.org/10.1002/ana.10262
Kerchner, G. A., Racine, C. A., Hale, S., Wilheim, R., Laluz, V., Miller, B. L., & Kramer, J. H. (2012). Cognitive processing speed in older adults: Relationship with white matter integrity. *PLOS ONE*, *7*(11), e50425. https://doi.org/10.1371/journal.pone.0050425
Lichtman, J. H., Leifheit, E. C., Safdar, B., Bao, H., Krumholz, H. M., Lorenze, N. P., Daneshvar, M., Spertus, J. A., & D'Onofrio, G. (2018). Sex differences in the presentation and perception of symptoms among young patients with myocardial infarction: Evidence from the VIRGO study (Variation in Recovery: Role of Gender on Outcomes of Young AMI Patients). *Circulation, 137*(8), 781–790. https://doi.org/10.1161/CIRCULATIONAHA.117.031650
Lipsky, M. S., & King, M. (2015). Biological theories of aging. *Disease-a-month*, *61*(11), 460–466. https://doi.org/10.1016/j.disamonth.2015.09.005
Liu, P. Z., & Nusslock, R. (2018). Exercise-mediated neurogenesis in the hippocampus via BDNF. *Frontiers in Neuroscience, 12*, 52. https://doi.org/10.3389/fnins.2018.00052
Lowery, E. M., Brubaker, A. L., Kuhlmann, E., & Kovacs, E. J. (2013). The aging lung. *Clinical Interventions in Aging, 8*, 1489–1496. https://doi.org/10.2147/cia.s51152
Maymone, M. B. C., Laughter, M., Pollock, S., Khan, I., Marques, T., Abdat, R., Goldberg, L. J., & Vashi, N. A. (2021). Hair aging in different races and ethnicities. *The Journal of Clinical and Aesthetic Dermatology*, *14*(1), 38–44. https://europepmc.org/article/MED/33584967
Medina, L., Sabo, S., & Vespa, J. (2020). *Living longer: Historical and projected life expectancy in the United States, 1960 to 2060*. U.S. Department of Commerce, U.S. Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2020/demo/p25-1145.pdf
MedlinePlus (2022). *Is longevity determined by genetics?* National Library of Medicine. https://medlineplus.gov/genetics/understanding/traits/longevity/
Merrick, M. T., Ford, D. C., Ports, K. A., Guinn, A. S., Chen, J., Klevens, J., Metzler, M., Jones, C. M., Simon, T. R., Daniel, V. M., Ottley, P., & Mercy, J. A. (2019). Vital signs: Estimated proportion of adult health problems attributable to adverse childhood experiences and implications for prevention—25 states, 2015–2017. *Morbidity and Mortality Weekly Report, 68*(44), 999–1005. https://doi.org/10.15585/mmwr.mm6844e1
Mitteldorf, J. (2010). Aging is not a process of wear and tear. *Rejuvenation Research*, *13*(2–3), 322–326. https://doi.org/10.1089/rej.2009.0967
Moreno-Jiménez, E. P., Flor-García, M., Terreros-Roncal, J., Rábano, A., Cafini, F., Pallas-Bazarra, N., Ávila, J., & Llorens-Martín, M. (2019). Adult hippocampal neurogenesis is abundant in neurologically healthy subjects and drops sharply in patients with Alzheimer's disease. *Nature Medicine, 25*, 554–560. https://doi.org/10.1038/s41591-019-0375-9
National Institute on Aging. (2017). Skin care and aging. https://www.nia.nih.gov/health/skin-care-and-aging
National Institute on Aging. (2018). Heart health and aging. https://www.nia.nih.gov/health/heart-health-and-aging
National Institute on Aging. (2020). How smell and taste change as you age. https://www.nia.nih.gov/health/smell-and-taste
National Institute on Aging. (2022). Urinary incontinence in older adults. https://www.nia.nih.gov/health/urinary-incontinence-older-adults
Newsom, R., & DeBanto, J. (2023, September 19). *Aging and sleep*. Sleep Foundation. https://www.sleepfoundation.org/aging-and-sleep
Nolan, L. S. (2020). Age-related hearing loss: Why we need to think about sex as a biological variable. *Journal of Neuroscience Research, 98*(9), 1705–1720. https://doi.org/10.1002/jnr.24647
Novais, A., Monteiro, S., Roque, S., Correia-Neves, M., & Sousa, N. (2017). How age, sex and genotype shape the stress response. *Neurobiology of Stress*, *6*, 4456. https://doi.org/10.1016/j.ynstr.2016.11.004
O'Connor, D. B., Thayer, J. F., & Vedhara, K. (2021). Stress and health: A review of psychobiological processes. *Annual Review of Psychology, 72*, 663–688. https://doi.org/10.1146/annurev-psych-062520-122331
Othman, Z., Abdul Halim, A. S., Azman, K. F., Ahmad, A. H., Zakaria, R., Sirajudeen, K. N. S., Wijaya, A., & Ahmi, A. (2022). Profiling the research landscape on cognitive aging: A bibliometric analysis and network visualization. *Frontiers in Aging Neuroscience, 14*, 876159. https://doi.org/10.3389/fnagi.2022.876159
Peters, R. (2006). Ageing and the brain. *Postgraduate Medical Journal*, *82*(964), 84–88. https://doi.org/10.1136/pgmj.2005.036665
Sapolsky, R. M. (1992). *Stress, the aging brain, and the mechanisms of neuron death*. MIT Press.
Sarafrazi, N., Wambogo, E. A., & Shepherd, J. A. (2021). *Osteoporosis or low bone mass in older adults: United States, 2017–2018*. U.S. Department of Health and Human Services, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. https://doi.org/10.15620/cdc:103477
Sattaur, Z., Lashley, L. K., & Golden, C. J. (2020). Wear and tear theory of aging. *Essays in developmental psychology*. Available at: https://nsuworks.nova.edu/cps_facbooks/732
Sele, S., Liem, F., Mérillat, S., & Jäncke, L. (2021). Age-related decline in the brain: A longitudinal study on inter-individual variability of cortical thickness, area, volume, and cognition. *NeuroImage, 240*, 118370. https://doi.org/10.1016/j.neuroimage.2021.118370
Sharma, A., & Hindman, H. B. (2014). Aging: A predisposition to dry eyes. *Journal of Ophthalmology, 2014*, 1–8. https://doi.org/10.1155/2014/781683
Sharma, G., & Goodwin, J. (2006). Effect of aging on respiratory system physiology and immunology. *Clinical Interventions in Aging, 1*(3), 253–260. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695176/
Shaw, M. E., Abhayaratna, W. P., Sachdev, P. S., Anstey, K. J., & Cherbuin, N. (2016). Cortical thinning at midlife: The PATH through life study. *Brain Topography, 29*, 875–884. https://doi.org/10.1007/s10548-016-0509-z
Shay, J. W., & Wright, W. E. (2000). Hayflick, his limit, and cellular ageing. *Nature Reviews Molecular Cell Biology, 1*, 72–76. https://doi.org/10.1038/35036093
Sivertsen, B., Pallesen, S., Friborg, O., Nilsen, K. B., Bakke, Ø. K., Goll, J. B., & Hopstock, L. A. (2021). Sleep patterns and insomnia in a large population-based study of middle-aged and older adults: The Tromsø study 2015–2016. *Journal of Sleep Research, 30*(1), e13095. https://doi.org/10.1111/jsr.13095
Sjöstrand, J., Laatikainen, L., Hirvelä, H., Popovic, Z., & Jonsson, R. (2011). The decline in visual acuity in elderly people with healthy eyes or eyes with early age-related maculopathy in two Scandinavian population samples. *Acta Ophthalmologica*, *89*(2), 116–123. https://doi.org/10.1111/j.1755-3768.2009.01653.x
Sorrells, S. F., Paredes, M. F., Cebrian-Silla, A., Sandoval, K., Qi, D., Kelley, K. W., James, D., Mayer, S., Chang, J., Auguste, K. I., Chang, E. F., Gutierrez, A. J., Kriegstein, A. R., Mathern, G. W., Oldham, M. C., Huang, E. J., Garcia-Verdugo, J. M., Yang, Z., & Alvarez-Buylla, A. (2018). Human hippocampal neurogenesis drops sharply in

children to undetectable levels in adults. *Nature, 555*, 377–381. https://doi.org/10.1038/nature25975
Stillman, C. M., Esteban-Cornejo, I., Brown, B., Bender, C. M., & Erickson, K. I. (2020). Effects of exercise on brain and cognition across age groups and health states. *Trends in Neurosciences*, *43*(7), 533–543. https://doi.org/10.1016/j.tins.2020.04.010
Tani, Y., Fujiwara, T., & Kondo, K. (2020). Association between adverse childhood experiences and dementia in older Japanese adults. *JAMA Network Open, 3*(2), e1920740. https://doi.org/10.1001/jamanetworkopen.2019.20740
Thayer, J. F., Mather, M., & Koenig, J. (2021). Stress and aging: A neurovisceral integration perspective. *Psychophysiology, 58*(7), e13804. https://doi.org/10.1111/psyp.13804
van den Berg, N., Rodríguez-Girondo, M., van Dijk, I. K., Mourits, R. J., Mandemakers, K., Janssens, A. A. P. O., Beekman, M., Smith, K. R., & Slagboom, P. E. (2019). Longevity defined as top 10% survivors and beyond is transmitted as a quantitative genetic trait. *Nature Communications*, *10*, 35. https://doi.org/10.1038/s41467-018-07925-0
Volpi, E., Nazemi, R., & Fujita, S. (2004). Muscle tissue changes with aging. *Current Opinion in Clinical Nutrition and Metabolic Care, 7*(4), 405–410. https://doi.org/10.1097/01.mco.0000134362.76653.b2
von Gablenz, P., Hoffmann, E., & Holube, I. (2020). Gender-specific hearing loss in German adults aged 18 to 84 years compared to US American and current European studies. *PLOS ONE, 15*(4), e0231632. https://doi.org/10.1371/journal.pone.0231632
Weinreb, R. N., Aung, T., & Medeiros, F. A. (2014). The pathophysiology and treatment of glaucoma. *JAMA*, *311*(18), 1901. https://doi.org/10.1001/jama.2014.3192
Wickremaratchi, M. M., & Llewelyn, J. G. (2006). Effects of ageing on touch. *Postgraduate Medical Journal*, *82*(967), 301–304. https://doi.org/10.1136/pgmj.2005.039651
Widén, S., Båsjö, S., Möller, C., & Kähäri, K. (2017). Headphone listening habits and hearing thresholds in Swedish adolescents. *Noise Health*, *19*(88), 125–132. https://doi.org/10.4103/nah.nah_65_16
Wilson, R. S., Yu, L., Leurgans, S. E., Bennett, D. A., & Boyle, P. A. (2020). Proportion of cognitive loss attributable to terminal decline. *Neurology, 94*(1), e42–e50. https://doi.org/10.1212/WNL.0000000000008671
Xu, J. Q., Murphy, S. L., Kochanek, K. D., and Arias, E. (2021). Deaths: Final data for 2019. *National Vital Statistics Reports, 70*(8). National Center for Health Statistics. https://dx.doi.org/10.15620/cdc:106058
Yassa, M. A., Mattfeld, A. T., Stark, S. M., & Stark, C. E. (2011). Age-related memory deficits linked to circuit-specific disruptions in the hippocampus. *Proceedings of the National Academy of Sciences of the United States of America, 108*(21), 8873–8878. https://doi.org/10.1073/pnas.1101567108
Yiallouris, A., Tsioutis, C., Agapidaki, E., Zafeiri, M., Agouridis, A. P., Ntourakis, D., & Johnson, E. O. (2019). Adrenal aging and its implications on stress responsiveness in humans. *Frontiers in Endocrinology, 10*. https://doi.org/10.3389/fendo.2019.00054
Ziada, A. S., Smith, M.-S. R., & Côté, H. (2020). Updating the free radical theory of aging. *Frontiers in Cell and Developmental Biology*, *8*. https://doi.org/10.3389/fcell.2020.575645

15.2 Health Risks in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the major physical health concerns of late adulthood
- Identify the major mental health concerns of late adulthood
- Describe research and issues related to health-care expenses

Growing up, Jarvis listened to his older relatives complain about their aches and pains and thought, “I’ll never do that.” Now, as he enters his seventies, he realizes how wrong he was. Although his overall health is pretty good, years of serving in the military and working in construction have resulted in some hearing loss, as well as arthritis in his hands, wrists, and knees. These problems don’t significantly impair his functioning, but Jarvis takes more aspirin than he used to and has started to wear a hearing aid. Following a cancer scare, he gave up smoking and discovered that he was breathing better and had more stamina than he expected to have at his age. Jarvis worries less than he did when he was younger, although the cost of health care gives him some anxiety. He resolves to do his best to stay healthy so he can keep enjoying life.

This section describes different types of physical and mental health risks and how they relate to older adults. Policy issues related to health-care affordability and accessibility can also play a role in health risks in late adulthood.

Physical Health Concerns in Late Adulthood

In health research, good health is typically defined by omission. In other words, researchers typically view good health as the lack of any short- or long-term diseases or conditions that can have a negative effect on quality of life, functioning, or future.

Acute and Chronic Health Problems

An **acute condition** tends to occur quickly and last only a brief period. Examples include many short-term, common, and contagious conditions such as the common cold and flu. Acute conditions are not associated with age. On the other hand, a **chronic condition** often develops slowly over time and is positively correlated with age. The defining characteristic of a chronic condition is that it has a long duration, several months or longer, or even occurs on a constant basis and needs management to prevent worsening over time (National Council on Aging, 2020). Examples include osteoarthritis, heart disease, asthma, and diabetes. Poor lifestyle choices such as unhealthy diet, a sedentary lifestyle, and smoking increase the risk of developing some of these health conditions.

As we get older, the odds of facing chronic health conditions increase. Around 70 percent of U.S. adults aged fifty-five to sixty-four years manage at least one chronic health condition, and 14 percent have three or more. By age sixty-five years, those numbers have risen to 86 and 23 percent, respectively (Centers for Disease Control and Prevention, 2015). Due to the increasing population of older adults, however, the number of individuals with at least one chronic health problem is expected to double between 2020 and 2050 (Ansah & Chiu, 2023). This is particularly worrisome because of the high cost of medical care for chronic conditions; in the United States, 85 percent of health-care costs are spent on chronic conditions (Holman et al., 2020). In 2011, this cost was predicted to reach $47 trillion by 2030 (Hacker, 2024). Since the COVID-19 pandemic, the number of people needing care for chronic conditions has increased, and this figure is now predicted to be even higher (Cutler, 2022; Tene et al., 2023; Tufts et al., 2023).

Acute conditions, however, become less common with age. Preschool children on average experience six to eight colds per year, sometimes one per month, because of their limited immunity to different viruses. As we get older, the lifelong process of contracting these acute conditions builds immunity to specific infections, decreasing the odds of future acute illness (Pappas, 2022). This is not to say that acute conditions are not a problem for older adults. As mentioned earlier, many acute conditions such as the flu, pneumonia, RSV (respiratory syncytial virus), and COVID-19 can be more serious and potentially fatal for older adults because the immune system's ability to respond to infections weakens with age. This is a main reason older adults have been more likely to experience serious illness from COVID-19 and why they are highly encouraged to get regularly vaccinated.

Sexual Functioning in Older Age

Sexual activity remains a common element of relationships in later life. While sexual activity may be less frequent, a large percentage of older adults still enjoy sex (Jackson et al., 2020; Lee et al., 2016; Ricoy-Cano et al., 2020). Several studies have indicated that 50 to 80 percent of adults aged sixty to seventy-four years and 15 to 30 percent of adults over age eighty years report being sexually active, with men reporting more sexual activity than women (Jackson et al., 2020; Lee et al., 2016).

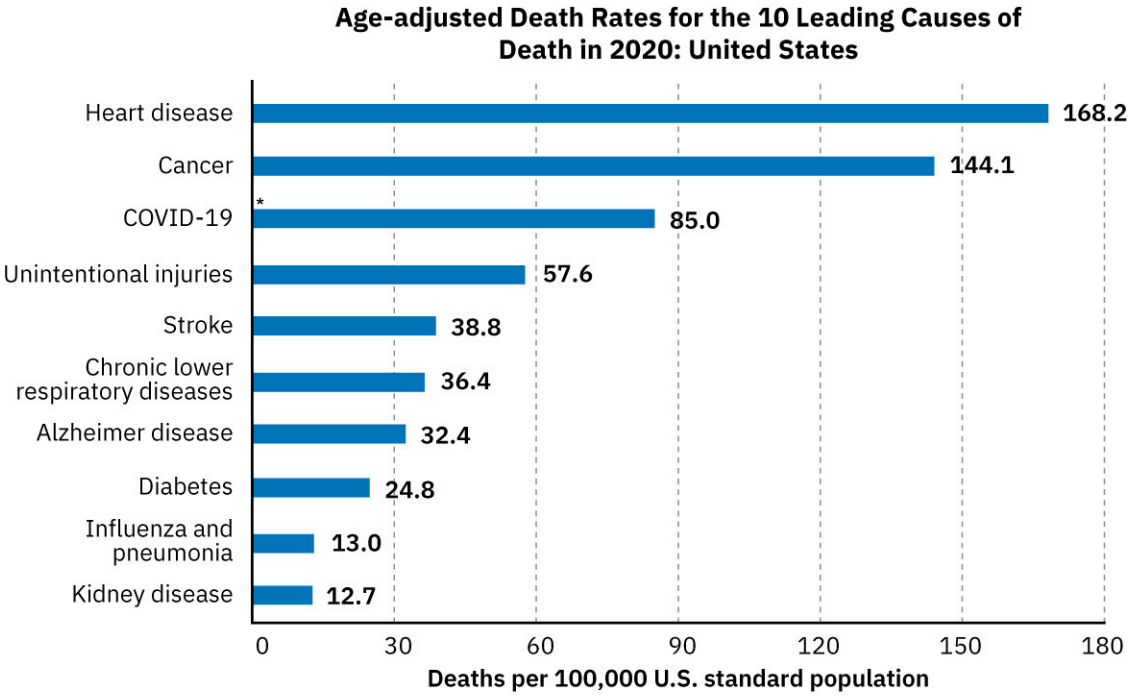
Physical health may affect sexual functioning more in older adults than in other age groups. For example, estrogen and testosterone levels decline after middle age (Brotto et al., 2016; Hochberg & Konner, 2020; Hull et al., 2011; Ricoy-Cano et al., 2020), which can affect both sex drive and performance (including vaginal lubrication and the ability to achieve an erection). Joint pain and loss of flexibility, both of which increase in later life, may make certain sexual positions uncomfortable. Health problems such as high blood pressure and diabetes, also more likely in later life, are reliably associated with lower rates of sexual activity and desire (Brotto et al., 2016; Jackson et al., 2020; Lee et al., 2016). Some research proposes that loss of sex drive or performance may be an early indicator of health problems (Jackson et al., 2020), suggesting that health-care providers should ask older patients about their sexual health as a routine part of medical checkups.

Another issue is prevention of sexually transmitted infections (STIs). Over the past decade or so, rates of STIs have increased in many countries, and older adults aren't exempt (Bourchier et al., 2020; Morgan et al., 2023; Smith et al., 2020). However, older adults are generally unlikely to use prevention methods such as condoms or PrEP (Morgan et al., 2023), and they demonstrate low knowledge of STI transmission, symptoms, and prevention (Smith et al., 2020). Therefore, health-care providers should screen for STIs and discuss safe sex methods with their older patients.

Specific Threats to Health in Older Age

Researchers examining data from the Centers for Disease Control and Prevention (Xu et al., 2022) found that seven of the ten leading causes of death for older adults were chronic health conditions that typically become more common in later years (Figure 15.10). The leading cause of death in the United States for 2020 and 2021 was heart disease, an example of a chronic condition associated with many lifestyle factors such as diet, exercise, and stress. The second leading cause of death was cancer, followed by COVID-19, injuries, stroke,

respiratory disease, Alzheimer's disease, diabetes, liver disease/cirrhosis, and kidney disease. The more common age-related causes of death, such as heart disease, some types of cancer, respiratory disease, and diabetes, are all at least partly caused by environmental and lifestyle characteristics (National Center for Health Statistics, 2021).



* COVID-19 became an official cause of death in 2020

NOTES: A total of 3,383,729 resident deaths were registered in the United States in 2020. The 10 leading causes of death accounted for 74.1% of all deaths in the United States in 2020. Causes of death are ranked according to number of deaths. Data table for includes the number of deaths for leading causes and the percentage of total deaths.

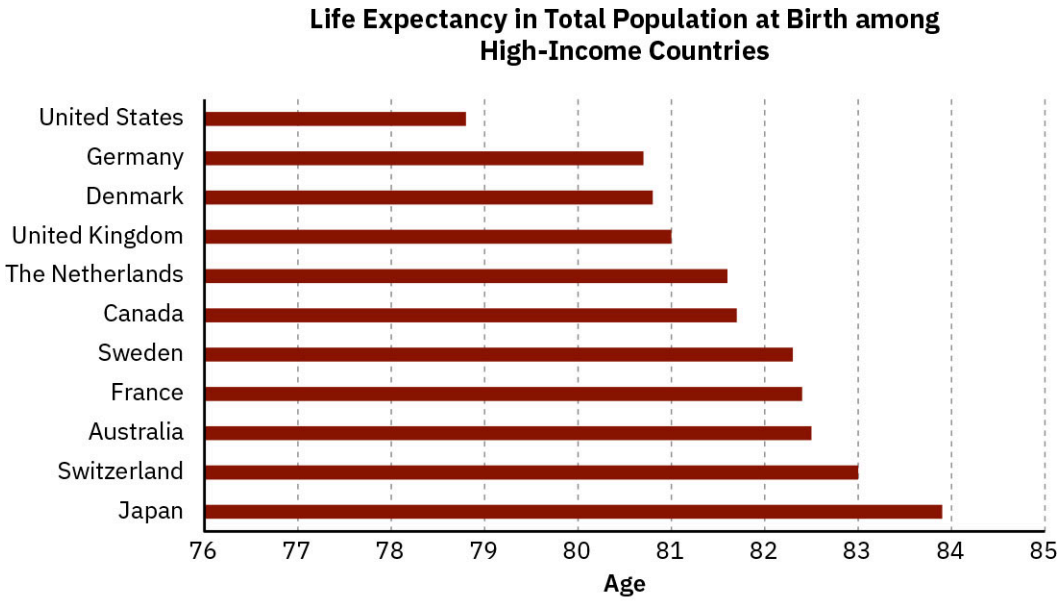
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

FIGURE 15.10 Many of the most common causes of death, such as heart disease and cancer, can be attributed to a combination of genetics, lifestyle, and the aging process. (credit: modification of work "Figure 4. Age-adjusted death rates for the 10 leading causes of death in 2020: United States, 2019 and 2020" by National Center for Health Statistics/NCHS, Public Domain)

Many common causes of death are consistent across racial and ethnic groups, with subtle variations in their frequency. This is true for all the age-related causes of death as well, with heart disease and cancer leading across all racial and ethnic groups in the United States (Centers for Disease Control and Prevention, 2022). These variations are generally believed to be caused by environmental factors, particularly the chronic stress associated with poverty and institutionalized racism (Cunningham et al., 2017; Leitner et al., 2016). This chronic stress may accelerate the development of health problems (Forde, 2019; Simons, Lei, Klopack, Beach, et al., 2021; Simons, Lei, Kopack, Zhang, et al., 2021), and racism both within and outside of the health-care system can prevent people from receiving appropriate medical care (Leitner et al., 2016; Sim et al., 2021; Simons, Lei, Klopack, Beach, et al., 2021; Simons, Lei, Kopack, Zhang, et al., 2021). The end result is that medical problems may go untreated, thus leading to decreased life expectancy.

One study compared eleven of the highest-income countries—United States, United Kingdom, Germany, Sweden, France, the Netherlands, Switzerland, Denmark, Canada, Japan, and Australia—to better understand similarities and differences in health and health outcomes around the world. The United States appeared healthier than most countries on some high-risk factors such as smoking, and it ranked near the middle on alcohol consumption. On weight, however, the United States ranked worst, with 70.1 percent of the population

overweight or obese; Australia was next at 63.4 percent; and Japan had the fewest problems related to weight, with 23.8 percent of the population considered overweight or obese. Overall, the United States had the shortest average life expectancy at 78.8 years, and Japan the highest at 83.9 years (Papanicolas et al., 2018) (Figure 15.11).



Source: Papanicolas, I., Woskie, L., & Jha, A. K. (2018). Health care spending in the United States and other high-income countries. *JAMA, 319*(10), 1024.

FIGURE 15.11 The United States ranks last in terms of life expectancy at birth when compared to other high-income nations. (data source: Papanicolas et al., 2018; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Health problems and outcomes in developing and low-income countries are vastly different, because they are often those associated with living in poverty. For example, data from the World Health Organization suggest that neonatal conditions, diarrhea, malaria, tuberculosis, and HIV are all top-ten causes of death in countries within the bottom 25 percent when ranked on income (World Health Organization, 2020).

An interesting variation on international differences in health and life expectancy comes from the study of "Blue Zones," the areas of the world with an unusually high number of people older than their predicted life expectancy, in many cases 100 years of age or more (Buettner, 2008; Buettner & Skemp, 2016; Herbert et al., 2022; Kreouzi et al., 2022; Poulain & Herm, 2022). These places are Nicoya Peninsula, Costa Rica; Ikaria, Greece; Sardinia, Italy; Okinawa, Japan; and Loma Linda, California, in the United States. Their residents have longevity and good health in common, but they differ ethnically, economically, and geographically. What commonalities, then, are producing these good health outcomes?

Research has found several shared characteristics that appear to positively affect their health:

- *Moving naturally*—Blue Zone residents don't get formal exercise but are physically active in their daily lives (gardening, doing housework, walking to get places).
- *Having a sense of purpose*—They are motivated and goal oriented.
- *Managing stress*—They have regular rituals, such as prayer and ancestor worship, that help them cope with stress.
- *Monitoring their food portions and mealtimes*—They eat until they're only 80 percent full and also eat their largest meal at midday instead of in the evening.
- *Following a plant-based diet*—Most of their protein comes from beans and lentils; they may eat meat but not frequently.
- *Drinking in moderation*—Having one to two glasses of wine per day is associated with longer life in these

groups; however, there's controversy about the role of alcohol consumption in health.
- *Participating in a faith-based community*—Most residents attend some kind of religious services several times a month.
- *Putting family first*—Residents prioritize living with or near extended family and spending time with children and life partners.
- *Surrounding themselves with support*—They create networks of close friends who support their healthy behaviors and provide companionship (Buettner & Skemp, 2016; Herbert et al., 2022; Kreouzi et al., 2022; Poulain & Herm, 2022).

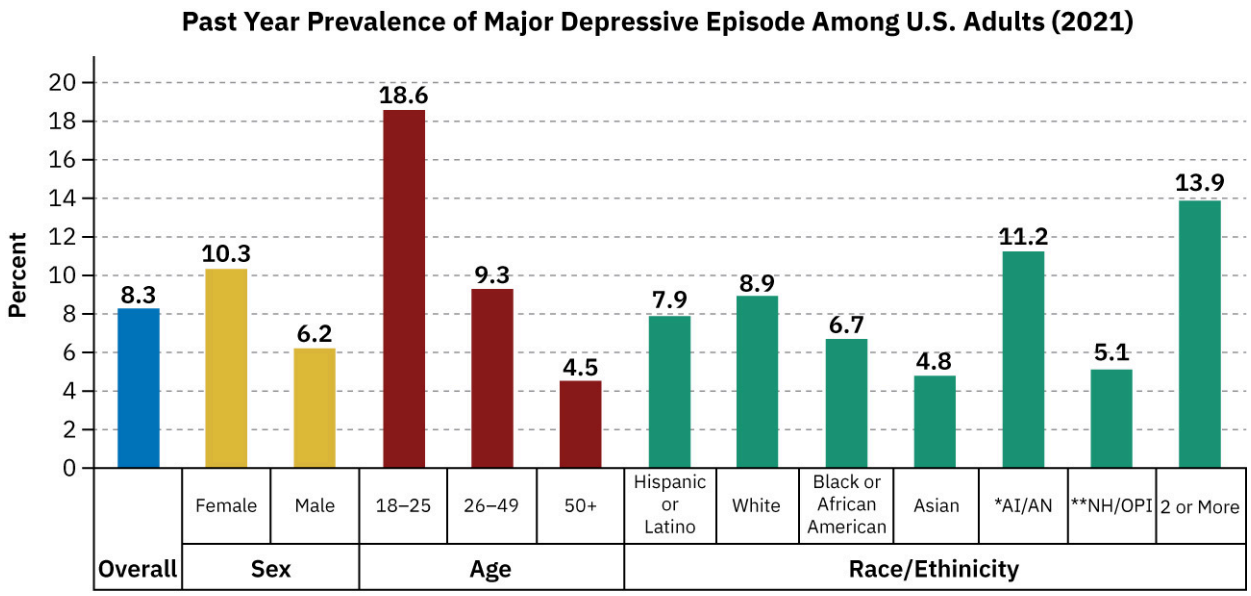
While it's hard to say conclusively that these behaviors are *causing* the increased life expectancy, they're consistent with other research associating them with positive health outcomes (Kreouzi et al., 2022). Many such behaviors, such as creating networks of close friends, consuming mainly plant-based protein, and being naturally active, can be achieved without spending a lot of money. This suggests that people in low-income situations may be able to incorporate some of these behaviors into their lives and increase their chances of living longer and healthier lives. However, other facets of SES may also limit awareness of best health practices. For example, some studies find that lower educational level and lower income are associated with less knowledge about how to promote good health (Svendsen et al., 2020). Research studies recommend public health strategies work to improve health equity by promoting better knowledge of health risk and health promotion behaviors across populations (Sorensen et al., 2015).

Mental Health Concerns in Late Adulthood

While some mental health problems are specific to later life, such as different types of dementia, other challenges such as anxiety and depression are less common for older adults than for younger age groups. A subfield of psychology called **geropsychology** focuses on enhancing the mental health of older adults (American Psychological Association, 2024). Geropsychologists are specially trained to address the way mental health problems may manifest themselves in late life.

Depression

Unfortunately, due to systemic ageism, people often negatively stereotype older adults as living lonely lives and struggling with depression as they face. However, according to research, these stereotypes are far from accurate. In fact, depression rates tend to decrease with age, and young adults are more than four times more likely to have depression than adults aged fifty years and older (Figure 15.12). Research in countries throughout Europe also suggests that older adults tend to defy stereotypes that they are a depressed group (Beller et al., 2021; Copeland et al., 1999). As it turns out, not only does the risk of depression decrease, but the experience of positive emotions increases (Cartensen & DeLiema, 2018).



* AI/AN = American Indian/Alaska Native
** NH/OPI = Native Hawaiian/Other Pacific Islander

Source: National Institute of Mental Health. (2021). Major Depression.
Data courtesy of Substance Abuse and Mental Health Services Administration (SAMHSA).

FIGURE 15.12 As the age data in this graph from the National Institute of Mental Health (2023) reveal, depression rates decrease as people get older. (credit: modification of work "Figure 1. Past Year Prevalence of Major Depressive Episode Among U.S. Adults (2021)" by SAMHSA/National Institute of Mental Health, Public Domain)

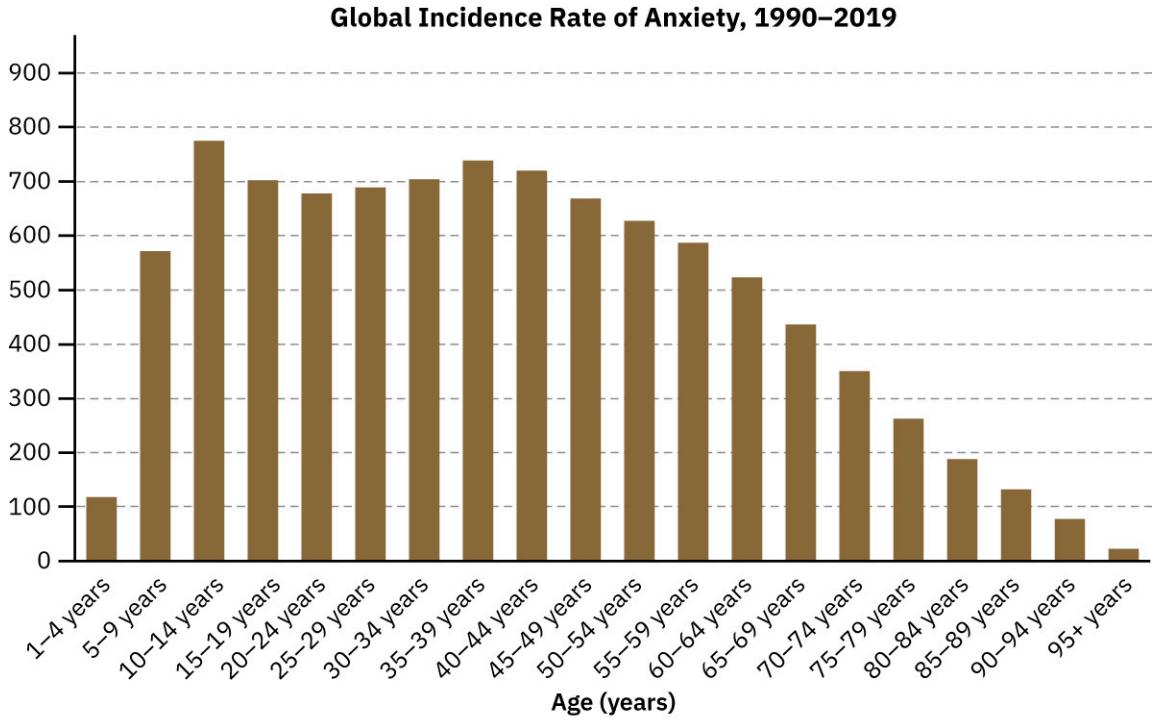
These findings don't suggest that depression is irrelevant to older populations. Nearly one in twenty older adults deal with major depression within a given year, and many more face less severe depressive symptoms. Research suggests that economic hardship, loneliness, serious chronic health problems, caregiving for a loved one, the loss of a loved one, and cognitive impairment all place older adults experiencing those events at a higher risk for depression than their peers (Alexopoulos, 2005; Işik et al., 2020). Adequate social support, exercise, and confidence in physical ability tend to reduce the risk of depression (Miller et al., 2019), as does setting and achieving realistic and personally meaningful goals (Samantaray & Kar, 2021). Being able to adapt to new circumstances is also beneficial; for example, looking at a move to a retirement community as a relief from the responsibilities of home ownership instead of a loss of independence may prevent someone from being distressed about this change (Regier & Parmalee, 2021).

Research shows that older adults are at a higher risk for suicide. Overall, men are much more likely to die by suicide, a finding consistent across race, ethnicity, and age. White people tend to have higher suicide rates than other racial and ethnic groups. Those in the earlier part of older adulthood (ages sixty-five to seventy-four years) have the lowest rate of suicide across adulthood, with around fifteen suicides per 100,000 individuals. The rate increases to nineteen suicides per 100,000 people for those aged seventy-five to eighty-four years, and more than twenty-two per 100,000 people for adults aged eighty-five years and older (American Foundation for Suicide Prevention, 2024). Having depression, being unmarried, and living alone make suicide more common in older age (Wiktorsson et al., 2010). Loss of a spouse has also been linked to suicide ideation in this population (Heuser & Howe, 2019).

Anxiety

Like depression, anxiety is more common in women than men; 23 percent of women reported experiencing an anxiety disorder in the past year compared to 14 percent of men (National Institute of Mental Health, n.d.). Lifetime prevalence of anxiety disorders is around 34 percent, but research generally suggests they typically first appear from childhood to early adulthood. They tend to peak in the early part of middle adulthood before

decreasing during the later part of middle adulthood and throughout older age (Bandelow & Michaelis, 2022; Javaid et al., 2023) (Figure 15.13).



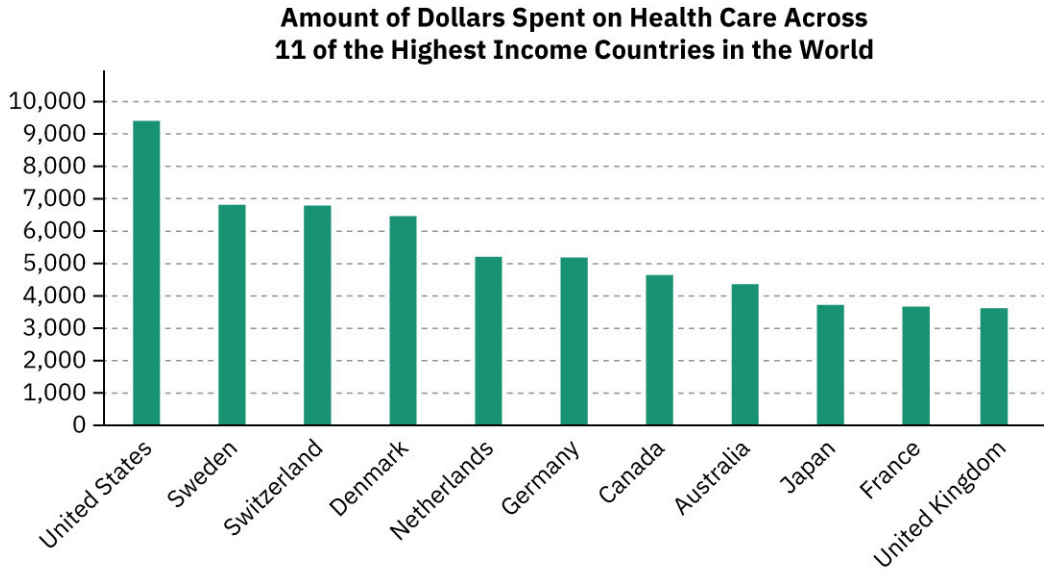
Source: Javaid, S. F., Hashim, I. J., Hashim, M. J., Stip, E., Samad, M. A., & Ahbabi, A. A. (2023). Epidemiology of anxiety disorders: global burden and sociodemographic associations. *Middle East Current Psychiatry, 30*(1), 44.

FIGURE 15.13 This visualization of data from the National Institute of Mental Health (n.d.) shows the percentage of people across different age groups who experienced an anxiety disorder within the past year. The lowest incidence occurs after age sixty years. (credit: modification of work "Fig. 3: A. Incidence" by Javaid et al/Springer Open, CC BY)

While anxiety is less common in later life, nearly one in ten older adults reported experiencing an anxiety disorder within the past year. Older adults with anxiety disorders frequently have comorbid disorders such as depression, serious medical issues, and cognitive decline. Late-onset anxiety is not common; most older adults dealing with anxiety also experienced it at younger ages. Anxiety in older adults can be successfully treated with either medication or cognitive behavioral therapy (Ando et al., 2023; Wolitzky-Taylor et al., 2010).

Health-Care Costs in Older Age

Paying for health care to treat the potential problems of later life can be both complicated and expensive in the United States. Despite having the lowest average life expectancy among high-income nations, the United States spent the highest percentage of gross domestic product (17.8 percent) and the highest amount per individual, including for individual health care, in addition to tax contributions toward public health-care programs (Figure 15.14) (Papanicolas et al., 2018). These statistics are concerning. They suggest that people in the United States are paying much more than those in comparable countries for health care, yet they are last in life expectancy among the nations studied.



Source: Papanicolas, I., Woskie, L., & Jha, A. K. (2018). Health care spending in the United States and other High-Income countries. *JAMA, 319*(10), 1024.

FIGURE 15.14 The United States pays much more for health care than comparable countries but ranks lowest among them for life expectancy. (data source: Papanicolas et al; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

One reason for the higher cost of health care in the United States may be the nation's complex health-care system. Most other affluent countries have **universal health care**, a system that makes health-care services accessible to all citizens with little or no out-of-pocket costs for individuals because the government subsidizes the cost through taxes. In the United States, in contrast, health care can be paid for entirely out of pocket or through privately purchased health insurance, employer-provided health insurance, or a variety of federal and state programs. This complex system can be difficult to navigate, especially for older adults who may have limited income and greater health-care needs. Few of these options cover all costs or all types of health care, and individuals typically pay at least some expenses themselves, either directly or through the purchase of supplemental insurance. Thus, socioeconomic status is a factor in access to high-quality health care.

Medicare is a U.S. federal program that pays some health-care costs for many older adults, particularly related to hospital care and doctor visits. Because many expenses such as vision care and dental care are not covered, however, most older adults also purchase supplemental health insurance or a Medicare Advantage plan (Medicare, n.d.) if they don't already have other insurance. Medicare does not automatically offer prescription drug coverage, a significant expense for older adults; this has to be added separately or covered through another form of insurance. Individuals who are unable to pay for health coverage may qualify for **Medicaid**, a program like Medicare but for those with limited income (Medicaid, n.d.).

LINK TO LEARNING

Read an article about older U.S. adults who either ration or skip taking their prescription drugs (https://openstax.org/r/104RationDrug) because they can't afford the cost.

While older adults face several health risks such as those related to normative age-related changes and increased health care costs, there are many protective factors that can promote mental and physical health and well-being in older adulthood. For example, older adults often experience healthy sexual functioning and lower risks of depression and anxiety than in earlier adulthood. Finally, several health promoting behaviors, or protective factors, can be introduced to improve health and life expectancy in older adults, such as engaging in physical activity, eating well, having a good social support system, and managing stress.

References

Alexopoulos, G. S. (2005). Depression in the elderly. *The Lancet*, *365*(9475), 1961–1970. https://doi.org/10.1016/s0140-6736(05)66665-2

American Foundation for Suicide Prevention. (2024, May 11). Suicide Statistics. https://afsp.org/suicide-statistics

American Psychological Association. (2024). *Geropsychology: It's your future*. https://www.apa.org/pi/aging/resources/geropsychology

Ando, M., Kao, Y-C., Lee, Y-C., Tai, S-A., Méndez, S. R., Sasaki, K., Tang, W., & Papatheodorou, S. (2023). Remote cognitive behavioral therapy for older adults with anxiety symptoms: A systematic review and meta-analysis. *Journal of Telemedicine and Telecare*. https://doi.org/10.1177/1357633x231151788

Ansah, J. P., & Chiu, C. -T. (2023). Projecting the chronic disease burden among the adult population in the United States using a multi-state population model. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.1082183

Bandelow, B., & Michaelis, S. (2022). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience*, *17*(3), 327–335. https://doi.org/10.31887/dcns.2015.17.3/bbandelow

Beller, J., Regidor, E., Lostao, L., Miething, A., Kröger, C., Safieddine, B., Tetzlaff, F., Sperlich, S., & Geyer, S. (2021). Decline of depressive symptoms in Europe: Differential trends across the lifespan. *Social Psychiatry and Psychiatric Epidemiology*, *56*, 1249–1262. https://doi.org/10.1007/s00127-020-01979-6

Bourchier, L., Malta, S., Temple-Smith, M., & Hocking, J. (2020). Do we need to worry about sexually transmissible infections (STIs) in older women in Australia? An investigation of STI trends between 2000 and 2018. *Sexual Health, 17*,(6) 517–524. https://doi.org/10.1071/SH20130

Brotto, L., Atallah, S., Johnson-Agbakwu, C., Rosenbaum, T., Abdo, C., Byers, E. S., Graham, C., Nobre, P., & Wylie, K. (2016). Psychological and interpersonal dimensions of sexual function and dysfunction. *The Journal of Sexual Medicine, 13*(4), 538–571. https://doi.org/10.1016/j.jsxm.2016.01.019

Buettner, D. (2008). *The Blue Zones: Lessons for living longer from the people who've lived the longest*. National Geographic Books.

Buettner, D., & Skemp, S. (2016). Blue Zones: Lessons from the world's longest lived. *American Journal of Lifestyle Medicine, 10*(5), 318–321. https://doi.org/10.1177/1559827616637066

Carstensen, L. L., & DeLiema, M. (2018). The positivity effect: A negativity bias in youth fades with age. *Current opinion in behavioral sciences, 19*, 7–12. https://doi.org/10.1016%2Fj.cobeha.2017.07.009

Centers for Disease Control and Prevention (2015). Percent of U.S. adults 55 and over with chronic conditions. U.S. Department of Health and Human Services. https://www.cdc.gov/nchs/health_policy/adult_chronic_conditions.htm

Centers for Disease Control and Prevention (2022). Leading Causes of Death – Males – by Race and Hispanic origin – United States, 2018. U.S. Department of Health and Human Services. https://www.cdc.gov/minorityhealth/lcod/men/2018/byrace-hispanic/index.htm

Copeland, J. R. M., Beekman, A. T., Dewey, M., Jordan, A. C., Lawlor, B. A., Linden, M., Lobo, A., Magnússon, H., Mann, A., Fichter, M. M., Prince, M., Saz, P., Turrina, C., & Wilson, K. (1999). Cross-cultural comparison of depressive symptoms in Europe does not support stereotypes of ageing. *British Journal of Psychiatry*, *174*(4), 322–329. https://doi.org/10.1192/bjp.174.4.322

Cunningham, T. J., Croft, J. B., Liu, Y., Lu, H., Eke, P. I., & Giles, W. H. (2017). Vital signs: Racial disparities in age-specific mortality among Blacks or African Americans - United States, 1999–2015. *MMWR Morbidity and Mortality Weekly Report, 66*(17), 444–456. https://doi.org/10.15585/mmwr.mm6617e1

Cutler, D. M. (2022). The costs of long COVID. *JAMA Health Forum, 3*(5), e221809. https://doi.org/10.1001/jamahealthforum.2022.1809

Forde, A. T., Crookes, D. M., Suglia, S. F., & Demmer, R. T. (2019). The weathering hypothesis as an explanation for racial disparities in health: A systematic review. *Annals of Epidemiology, 33*, 1–18. https://doi.org/10.1016/j.annepidem.2019.02.011

Hacker, K. (2024). The burden of chronic disease. *Mayo Clinic Proceedings. Innovations, Quality & Outcomes, 8*(1), 112–119. https://doi.org/10.1016/j.mayocpiqo.2023.08.005

Herbert, C., House, M., Dietzman, R., Climstein, M., Furness, J., & Kemp-Smith, K. (2022). Blue Zones: Centenarian modes of physical activity: A scoping review. *Journal of Population Ageing*, 1–37. https://doi.org/10.1007/s12062-022-09396-0

Heuser, C., & Howe, J. (2019). The relation between social isolation and increasing suicide rates in the elderly. *Quality in Ageing and Older Adults*, *20*(1), 2–9. https://doi.org/10.1108/qaoa-06-2018-0026Hochberg, Z., & Konner, M. (2020). Emerging adulthood, a pre-adult life- history stage. *Frontiers in Endocrinology, 10*(918). https://doi.org/10.3389/fendo.2019.00918

Holman, H. R. (2020). The relation of the chronic disease epidemic to the health care crisis. *ACR Open Rheumatology, 2*(3), 167–173. https://doi.org/10.1002/acr2.11114

Hull, H. R., Thornton, J., Wang, J., Pierson, R. N., Jr, Kaleem, Z., Pi-Sunyer, X., Heymsfield, S., Albu, J., Fernandez, J. R., Vanitallie, T. B., & Gallagher, D. (2011). Fat-free mass index: changes and race/ethnic differences in adulthood. *International Journal of Obesity, 35*(1), 121–127. https://doi.org/10.1038/ijo.2010.111

Işik, K., Başoğul, C., & Yildirim, H. (2020). The relationship between perceived loneliness and depression in the elderly and influencing factors. *Perspectives in Psychiatric Care*, *57*(1), 351–357. https://doi.org/10.1111/ppc.12572

Jackson, S. E., Yang, L., Koyanagi, A., Stubbs, B., Veronese, N., & Smith, L. (2020). Declines in sexual activity and function predict incident health problems in older adults: Prospective findings from the English Longitudinal Study of Ageing. *Archives of Sexual Behavior, 49*(3), 929–940. https://doi.org/10.1007/s10508-019-1443-4

Javaid, S. F., Hashim, I. J., Hashim, M. J., Stip, E., Samad, M. A., & Ahbabi, A. A. (2023). Epidemiology of anxiety disorders: Global burden and sociodemographic associations. *Middle East Current Psychiatry, 30*(1), 44. https://doi.org/10.1186/s43045-023-00315-3

Kreouzi, M., Theodorakis, N., & Constantinou, C. (2022). Lessons learned from Blue Zones, lifestyle medicine pillars and beyond: An update on the contributions of behavior and genetics to wellbeing and longevity. *American Journal of Lifestyle Medicine*. https://doi.org/10.1177/15598276221118494

Lee, D. M., Nazroo, J., O'Connor, D. B., Blake, M., & Pendleton, N. (2016). Sexual health and well-being among older men and women in England: Findings from the English longitudinal study of ageing. *Archives of Sexual Behavior, 45*(1), 133–144. https://doi.org/10.1007/s10508-014-0465-1

Leitner, J. B., Hehman, E., Ayduk, O., & Mendoza-Denton, R. (2016). Blacks' death rate due to circulatory diseases is positively related to whites' explicit racial bias. *Psychological Science, 27*(10), 1299–1311. https://doi.org/10.1177/0956797616658450

Medicaid. (n.d.). *Prescription drugs*. https://www.medicaid.gov/medicaid/prescription-drugs/index.html

Medicare. (n.d.). *How to get prescription drug coverage*. https://www.medicare.gov/drug-coverage-part-d/how-to-get-prescription-drug-coverage

Miller, K., Mesagno, C., McLaren, S., Grace, F., Yates, M., & Gomez, R. (2019). Exercise, mood, self-efficacy, and social support as predictors of depressive symptoms in older adults: Direct and interaction effects. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.02145

Morgan, E., Dyar, C., & Feinstein, B. A. (2023). Differences in infection and prevention of HIV and other sexually transmitted infections among older adults in Columbus, Ohio. *PLOS ONE, 18*(3), e0282702. https://doi.org/10.1371/journal.pone.0282702

National Center for Health Statistics. (2021). National vital statistics system, mortality. Data Brief 427. https://www.cdc.gov/nchs/data/databriefs/db427-tables.pdf

National Council on Aging. (2020). Chronic conditions for older adults. https://www.ncoa.org/article/chronic-versus-acute-disease

National Institute of Mental Health. (n.d.). Any anxiety disorder. https://www.nimh.nih.gov/health/statistics/any-anxiety-disorder

National Institute of Mental Health. (2023). Major depression. https://www.nimh.nih.gov/health/statistics/major-depression

Papanicolas, I., Woskie, L., & Jha, A. K. (2018). Health care spending in the United States and other high-income countries. *JAMA*, *319*(10), 1024. https://doi.org/10.1001/jama.2018.1150

Pappas, D. (2022). *Patient education: The common cold in children (beyond the basics)*. UpToDate. https://www.uptodate.com/contents/the-common-cold-in-children-beyond-the-basics

Poulain, M., & Herm, A. (2022). Blue zone: A model to live longer and better. In M. Poulain & J. Mackowicz (Eds.), *Positive ageing and learning from centenarians: Living longer and better* (pp. 1–17). Routledge Taylor & Francis. https://doi.org/10.4324/9781003162216

Regier, N. G., & Parmelee, P. A. (2021). Selective optimization with compensation strategies utilized by older adults newly-transitioned to assisted living. *Aging & Mental Health, 25*(10), 1877–1886. https://doi.org/10.1080/13607863.2020.1856776

Ricoy-Cano, A. J., Obrero-Gaitán, E., Caravaca-Sánchez, F., & Fuente-Robles, Y. M. D. L. (2020). Factors conditioning sexual behavior in older adults: A systematic review of qualitative studies. *Journal of Clinical Medicine, 9*(6), 1716. https://doi.org/10.3390/jcm9061716

Samantaray, N. N., & Kar, N. (2021). Improving depression and well-being in older adults using selection, optimization, and compensation model: A case series. *Journal of Geriatric Mental Health, 8*(1), 34–38. https://doi.org/10.4103/jgmh.jgmh_7_21

Sim, W., Lim, W. H., Ng, C. H., Chin, Y. H., Yaow, C. Y. L., Cheong, C. W. Z., Khoo, C. M., Samarasekera, D. D., Devi, M. K., & Chong, C. S. (2021). The perspectives of health professionals and patients on racism in healthcare: A qualitative systematic review. *PLOS ONE, 16*(8), e0255936. https://doi.org/10.1371/journal.pone.0255936

Simons, R. L., Lei, M. K., Klopack, E., Beach, S. R., Gibbons, F. X., & Philibert, R. A. (2021). The effects of social adversity, discrimination, and health risk behaviors on the accelerated aging of African Americans: Further support for the weathering hypothesis. *Social Science & Medicine, 282*, 113169. https://doi.org/10.1016/j.socscimed.2020.113169

Simons, R. L., Lei, M. K., Klopack, E., Zhang, Y., Gibbons, F. X., & Beach, S. R. (2021). Racial discrimination, inflammation, and chronic illness among African American women at midlife: Support for the weathering perspective. *Journal of Racial and Ethnic Health Disparities, 8*, 339–349. https://doi.org/10.1007/s40615-020-00786-8

Smith, M. L., Bergeron, C. D., Goltz, H. H., Coffey, T., & Boolani, A. (2020). Sexually transmitted infection knowledge among older adults: Psychometrics and test–retest reliability. *International Journal of Environmental Research and Public Health. 17*(7), 2462. https://doi.org/10.3390/ijerph17072462

Sørensen, K., Pelikan, J. M., Röthlin, F., Ganahl, K., Slonska, Z., Doyle, G., Fullam, J., Kondilis, B., Agrafiotis, D., Uiters, E., Falcon, M., Mensing, M., Tchamov, K., van den Broucke, S., Brand, H., & HLS-EU Consortium (2015). Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU). *European journal of public health, 25*(6), 1053–1058. https://doi.org/10.1093/eurpub/ckv043

Svendsen, M. T., Bak, C. K., Sørensen, K., Pelikan, J., Riddersholm, S. J., Skals, R. K., Mortensen, R. N., Maindal, H. T., Bøggild, H., Nielsen, G., & Torp-Pedersen, C. (2020). Associations of health literacy with socioeconomic position, health risk behavior, and health status: a large national population-based survey among Danish adults. *BMC public health*, *20*(1), 565. https://doi.org/10.1186/s12889-020-08498-8
Tene, L., Bergroth, T., Eisenberg, A., David, S. S. B., & Chodick, G. (2023). Risk factors, health outcomes, healthcare services utilization, and direct medical costs of patients with long COVID. *International Journal of Infectious Diseases, 128*, 3–10. https://doi.org/10.1016/j.ijid.2022.12.002
Tufts, J., Guan, N., Zemedikun, D. T., Subramanian, A., Gokhale, K., Myles, P., Williams, T., Marshall, T., Calvert, M., Matthews, K., Nirantharakumar, K., Jackson, L. J., & Haroon, S. (2023). The cost of primary care consultations associated with long COVID in non-hospitalised adults: A retrospective cohort study using UK primary care data. *BMC Primary Care, 24*(1), 245. https://doi.org/10.1186/s12875-023-02196-1
Wiktorsson, S., Runeson, B., Skoog, I., Östling, S., & Waern, M. (2010). Attempted suicide in the elderly: Characteristics of suicide attempters 70 years and older and a general population comparison group. *American Journal of Geriatric Psychiatry*, *18*(1), 57–67. https://doi.org/10.1097/jgp.0b013e3181bd1c13
Wolitzky-Taylor, K., Castriotta, N., Lenze, E. J., Stanley, M. A., & Craske, M. G. (2010). Anxiety disorders in older adults: A comprehensive review. *Depression and Anxiety*, *27*(2), 190–211. https://doi.org/10.1002/da.20653
World Health Organization. (2020). The top 10 causes of death. https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death
Xu, J., Murphy, S., Kochanek, K. D., & Arias, E. (2022). Mortality in the United States, 2021. https://doi.org/10.15620/cdc:122516

15.3 Cognition and Memory in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the features of cognition in late adulthood
- Describe how expertise and wisdom may contribute to everyday problem-solving

Ahmad's career as a high school history teacher required constant mental activity and use of cognitive skills such as memory, attention, and problem-solving. When he was starting out, Ahmad relied on older, more experienced teachers for advice, but as the years progressed, he became the one younger colleagues came to for guidance, which was a gratifying feeling. After retiring, Ahmad continued to engage in cognitively stimulating activities like reading and doing puzzles, and he began volunteering with an organization that crafted blankets and hats for babies in NICUs. Ahmed enjoyed learning how to knit and crochet, even though some things took a little longer to grasp than they might have thirty years ago.

Theories about cognitive development debate whether people have a single or multiple intelligences. Most research on older adults does not focus on a single intelligence score, however, because abilities tend to change at different times and in different directions. For some cognitive tasks, such as crystallized intelligence and vocabulary, improvements occur across adulthood. For others, such as fluid intelligence and processing speed, performance typically peaks earlier in adulthood and then declines (Veríssimo et al., 2022). This section covers various cognitive abilities in later life, including processing speed, wisdom, and different types of memory, as well as the broader context of these cognitive skills for solving problems in everyday life.

Cognitive Abilities in Late Adulthood

Ageist stereotypes can lead many to assume that moments of forgetfulness in older adults are an indicate of cognitive decline. However, in reality all of us have moments of forgetfulness or confusions. What does the research on memory and cognition in late adulthood reveal? In fact, cognitive aging is much more nuanced than the stereotypes suggest.

Processing Speed

Processing speed, one of the most basic cognitive skills we can study, measures the length of time it takes for us to perceive sensory information and follow with a response. One way to measure this response time experimentally is to have participants press a button on a keyboard as soon as a shape or object appears on a screen. The number of milliseconds their response requires indicates each individual's reaction time. Processing speed is associated with overall cognitive ability, and people with quick processing speed tend to perform well on other cognitive tasks like memory and attention (Papadopoulos et al., 2018; Ticha et al., 2023).

Research consistently finds that processing speed slows across all of adulthood (Davis et al., 2017; Marrero-Polegre et al., 2023; Ticha et al., 2023). However, this decline doesn't manifest the same way for everyone. For example, education received in young adulthood is positively correlated with performance on cognitive tasks in late adulthood, although it doesn't appear to prevent decline; instead, it seems to produce a higher baseline level of functioning that means cognitive skills are better maintained with age (Davis et al., 2017; Vonk et al., 2020). Similarly, speed on cognitive tasks in young adulthood and middle age is often predictive of performance in later life. Members of the fastest tenth percentile, despite consistent declines, may still be

faster in their seventies than many of the slower groups were in their twenties (Introzzi et al., 2020; Salthouse, 2000).

More complex processing-speed tasks, like driving, require more complex responses and reveal age-related declines (Figure 15.15). If a car pulls out in front of you or the driver ahead of you slams their brakes, you may have to react quickly to avoid an accident, a response heavily based on processing speed but more complex than simple reaction time because of the number of possible reactions. You could honk your horn, swerve to the right, swerve to the left, brake hard, accelerate, or choose a combination of responses. Research suggests that older adults' processing speed is predictive of driving mistakes during simulations, but that older adults tend to compensate for slower processing speeds by driving more slowly, which affords them time to respond to hazards. Thus, it's difficult to discern how much increased risk of driving accidents among older adults is due to slowed processing speed and how much may be due to other relevant issues such as visual declines (Doroudgar et al., 2017).

FIGURE 15.15 Driving represents an everyday activity that relies heavily on processing speed. (credit: "Driver" by David Evans/Flickr, CC BY 4.0)

LINK TO LEARNING

People concerned about their ability to drive (due to age, stroke, or other circumstances) can arrange for a special test to assess their safety behind the wheel, such as the one described in this Pre-Driving Assessment (https://openstax.org/r/104DriveAssess) from the Marshfield Clinic Health System. Usually conducted by an occupational therapist, the test focuses less on the understanding of traffic rules and more on cognitive, sensory, and motor functioning.

Fluid and Crystallized Intelligence

Many developmental paths you've learned about continue throughout later adulthood. For example, fluid intelligence declines with age, while crystallized abilities increase, with both trends continuing in those aged sixty years and older. Recall from 7.3 Intelligence in Middle Childhood that fluid intelligence is the ability to use logic and solve problems in new ways, and crystallized intelligence is our existing knowledge developed through education and experience. Initial theories indicated that relying on crystallized abilities could be a way to compensate for declining fluid abilities. More recent research, however, suggests this may not be the case. Tucker-Drob and colleagues (2022) found in two large longitudinal studies that individuals who declined the least in fluid abilities also increased the most in crystallized abilities across adulthood. Similarly, individuals experiencing the greatest declines in fluid abilities had less increase and sometimes even a decline in crystalized abilities. This suggests that crystalized abilities do not strengthen to compensate for declines in fluid abilities. Instead, there are more individual differences in the way cognitive ability changes throughout adulthood.

Memory and Older Age

Short-term memory has very limited capacity and retains information for a very brief period. Research suggests that it declines over time, noticeably at ages sixty through sixty-nine years and in more pronounced ways after age seventy years. Working memory requires more effort to use as we manipulate and apply information in short-term memory. These demands result in a more noticeable drop in working memory, especially over age seventy years, although some studies have noted little to no change between middle age and the start of late adulthood (Sharma & Babu, 2017). Short-term memory (with which we can, say, immediately recall numbers that were presented) is more passive and demonstrates more subtle declines (Dobbs & Rule, 1989; Pliatsikas et al., 2018).

Working and short-term memories typically last less than thirty seconds. When it comes to long-term memories, research has distinguished many types. One of these, implicit memory, is not conscious. That is, previous experiences allow us to complete a task without even realizing how. Think of learning to ride a bicycle (Figure 15.16). People often describe it as difficult and very intentional at first. Once they master the skill, though, they are able to ride a bicycle automatically, without remembering what to do each time (and if you learned to ride a bike, you likely still can even if it has been a long time). (May et al., 2005).

FIGURE 15.16 Implicit behavioral memories, such as how to ride a bicycle, are often well maintained into later life. (credit: modification of work “Elderly person cycling” by Dave Shaver/Flickr, CC BY 2.0)

In contrast, explicit memories are long-term memories of which we are quite aware. One type is semantic memory, which stores facts, vocabulary, and other information about the world. Semantic memory tends to remain intact and does not decline with age (Lalla et al., 2022). It overlaps considerably with crystalized intelligence, but retrieval problems grow more common with age (Crook & West, 1990; Srokova et al., 2022). For instance, the tip-of-the-tongue phenomenon, a temporary failure to recall a stored memory, increases in later years. But the basic functioning of semantic memory seems to remain fairly stable.

Another type of long-term memory is episodic memory, which stores details and information from life events. Research suggests that declines in episodic memory are among the more common age-related memory declines (Kinugawa et al., 2013). Most of this research, however, uses cross-sectional age comparisons. Longitudinal data confirm declines in episodic memory but suggest they may be more subtle and gradual than cross-sectional research indicates (Dixon et al., 2004). These declines have been associated with decreased functioning of the hippocampus; hippocampus functioning and episodic memory demonstrate accelerated declines after age sixty-five years (Nyberg, 2016).

An entire category of memory, **autobiographical memory**, is dedicated to remembering information about ourselves and our personal life and history. Episodic memories, which seem similar, are indeed part of our

autobiographical memory, but autobiographical memory includes many semantic memories as well. For example, you may remember the experience of your first day of high school—how you felt, what the classrooms looked like, and so on. This is episodic memory, which is often represented through images and feelings. Autobiographical memory, on the other hand, includes that episodic information plus semantic, factual information, such as the names of your teachers and whether it rained that day. We know a lot of factual information (semantic memories) about ourselves that is not linked to specific events of our life—our name, birth date, the name of the high school we attended are all examples of autobiographical memories that are relevant to semantic memories and not typically linked to a specific episode or life event (Frankenberg et al., 2021; Roediger & Marsh, 2003).

Research examining changes in autobiographical memory in later years parallels research related to episodic and semantic memory. There are declines in episodic aspects of autobiographical memory but not in the semantic aspect (Jacques & Levine, 2007). One unique finding related to autobiographical memory is the **positivity effect**, the tendency to remember things from our past more positively as we get older (Kennedy et al., 2004). Some research suggests this may be due to increases in emotional regulation ability, combined with shifting priorities for maintaining a positive emotional state.

Cognitive Aging in Context

Cognitive skills are interesting as a topic, but what's even more useful is the way people use these skills to accomplish real-life tasks. One area associated with more positive aging stereotypes is wisdom. Defining wisdom is a difficult task. Wide-ranging descriptions appear across both history and the academic literature, but in general, **wisdom** is the ability to use intellect and past experiences to make good decisions about the future. Wisdom requires considering the perspectives of others, compromising, and understanding uncertain or changing contexts (Grossman, 2017). Wisdom is similar to postformal thought, but it is more reliant on using life experiences.

The scientific literature on wisdom suggests the potential for wisdom to increase over time, though age alone is not a good indicator of wisdom. Age is, however, positively correlated with wisdom, since more experience can be beneficial for acquiring the life lessons needed for wisdom, and more experience can be had with age. The true defining characteristics of wisdom, however, are being open to experiences, learning from them, and being willing to change and adapt in the future based on these experiential lessons (Sternberg, 2005). People who take this approach to life are more likely to see their wisdom increase as they get older and subsequently gain more experiences and life lessons.

Research on everyday problem-solving looks at the way people solve cognitively demanding tasks and make decisions in the real world, including in social settings (Hertzog et al., 2021; Marsiske & Margrett, 2006; Strough et al., 2003). Many cognitive tasks typically used to study reasoning or problem-solving skills rely on abstract situations, unlike day-to-day life, a research approach that has been criticized for lacking validity (Artistico et al., 2019; Chaytor et al., 2003; Hamilton et al., 2022; Jones et al., 2021). If instead we measure skills used in activities of daily living (ADL), like figuring out a bus schedule or making financial decisions, participants can better demonstrate their abilities without being disadvantaged by the unfamiliar context of traditional cognitive tests. Artistico and colleagues (2019) found that asking older adults to solve problems they perceived as personally relevant resulted in more and better solutions than asking them to solve problems experienced by other people.

Are older adults more effective at solving everyday problems than young adults? Early research findings yield mixed results; some studies suggested they are (Blanchard-Fields et al., 2007), whereas other studies found these skills increased until middle adulthood before declining (Denney & Pearce, 1989), and some suggested a plateau lasting through most of early and middle adulthood before a decline in later years (Thornton & Dumke, 2005). More recent research has suggested several reasons for these inconsistent findings.

First, everyday problem-solving and decision-making likely tap into different underlying abilities (such as

crystallized and fluid abilities) that change differently with age; older adults tend to rely more on crystallized abilities than young and middle-aged adults do (Artistico et al., 2019; Chen et al., 2017), so performance may differ based on which abilities are required by the task in question. Also, this research has focused mostly on cross-sectional data, so what is interpreted as age differences could instead represent cohort differences (or a combination of both). For example, the primary stressors of young and middle-aged adults tend to relate to school and work, while for older adults they are health concerns. Because health concerns are longer term and harder to avoid and control than school and work concerns, they may require a different problem-solving approach that includes regulating emotional reactions instead of "fixing" the situation (Chen et al., 2018). If research uses solution-focused strategies as the determinant of success regardless of the task at hand, it may overlook other adaptive measures participants use to solve problems.

One potential contributor to everyday problem-solving is expertise, a very high level of knowledge or skill related to a specific area (Figure 15.17). Developing expertise often requires having a lot of experience with something; this is associated with age for obvious reasons, but as with wisdom, age alone doesn't make someone an expert. Experience appears to be more important. For example, one study examining financial decision-making found that expertise (defined here as deep experience with financial decision-making and a high level of knowledge of finance issues) was beneficial. Again, like wisdom, expertise may thus provide a path to making sound decisions that is not as affected by declines in fluid abilities, such as processing speed and reasoning (Li et al., 2015).

(a) (b)

FIGURE 15.17 After decades of study, (a) Jane Goodall and (b) Neil deGrasse Tyson each became distinguished experts in their respective fields: she in primate behavior and he in astrophysics. (credit a: modification of work "Jane Goodall" by Erik (HASH) Hersman/Flickr, CC BY 2.0; credit b: modification of work "Neil deGrasse Tyson at Howard University September 28, 2010" by Bruce F. Press/Wikimedia Commons, CC BY 3.0)

All the cognitive declines you've learned about are normative age-related results that most people tend to experience. They are usually small in scale, with very limited impact on everyday functioning (Harada et al., 2013). If cognitive declines are severe enough to interfere with someone's day-to-day life and threaten their independence, another problem such as dementia is likely the cause. While some small cognitive declines are normative with age in certain areas of memory, those with expertise can show improvements in everyday problem solving as they age. Much like other stages of the lifespan, there are many individual differences in cognitive abilities based on peoples environments, resources, and contexts. Many older adults can cognitively

adapt well to changes as they age through good adaptive cognition and a supportive environment (Blanchard-Fields & Chen, 1996).

References

Artistico, D., Cervone, D., & Garcia, C. M. (2019). My problems are solvable: Idiographic methods offset age differences in interpersonal problem solving among young, middle-aged, and older adults. *Frontiers in Psychology, 10*, 276. https://doi.org/10.3389/fpsyg.2019.00276

Blanchard-Fields, F., & Chen, Y. (1996). Adaptive cognition and aging. *American Behavioral Scientist, 39*(3), 231–248. https://doi.org/10.1177/0002764296039003003

Blanchard-Fields, F., Mienaltowski, A., & Seay, R. B. (2007). Age differences in everyday problem-solving effectiveness: Older adults select more effective strategies for interpersonal problems. *The Journals of Gerontology: Series B, 62*(1), P61–P64. https://doi.org/10.1093/geronb/62.1.p61

Chaytor, N., & Schmitter-Edgecombe, M. (2003). The ecological validity of neuropsychological tests: A review of the literature on everyday cognitive skills. *Neuropsychology Review, 13*(4), 181–197. https://doi.org/10.1023/b:nerv.0000009483.91468.fb

Chen, X., Hertzog, C., & Park, D. C. (2017). Cognitive predictors of everyday problem solving across the lifespan. *Gerontology, 63*(4), 372–384. https://doi.org/10.1159/000459622

Chen, Y., Peng, Y., Xu, H., & O'Brien, W. H. (2018). Age differences in stress and coping: Problem-focused strategies mediate the relationship between age and positive affect. *International Journal of Aging & Human Development, 86*(4), 347–363. https://doi.org/10.1177/0091415017720890

Crook, T. H., & West, R. L. (1990). Name recall performance across the adult life-span. *British Journal of Psychology, 81*(3), 335–349. https://doi.org/10.1111/j.2044-8295.1990.tb02365.x

Davis, D., Bendayan, R., Muniz Terrera, G., Hardy, R., Richards, M., & Kuh, D. (2017). Decline in search speed and verbal memory over 26 years of midlife in a British birth cohort. *Neuroepidemiology, 49*(3-4), 121–128. https://doi.org/10.1159/000481136

Denney, N. W., & Pearce, K. A. (1989). A developmental study of practical problem solving in adults. *Psychology and Aging, 4*(4), 438–442. https://doi.org/10.1037/0882-7974.4.4.438

Dixon, R. A., Wahlin, Å., Maitland, S. B., Hultsch, D. F., Hertzog, C., & Bäckman, L. (2004). Episodic memory change in late adulthood: Generalizability across samples and performance indices. *Memory & Cognition, 32*(5), 768–778. https://doi.org/10.3758/bf03195867

Dobbs, A. R., & Rule, B. G. (1989). Adult age differences in working memory. *Psychology and Aging, 4*(4), 500–503. https://doi.org/10.1037/0882-7974.4.4.500

Doroudgar, S., Chuang, H. M., Perry, P. J., Thomas, K. L., Bohnert, K., & Canedo, J. (2017). Driving performance comparing older versus younger drivers. *Traffic Injury Prevention, 18*(1), 41–46. https://doi.org/10.1080/15389588.2016.1194980

Frankenberg, C., Knebel, M., Degen, C., Siebert, J., Wahl, H., & Schröder, J. (2021). Autobiographical memory in healthy aging: A decade-long longitudinal 2study. *Aging, Neuropsychology, and Cognition, 29*(1), 158–179. https://doi.org/10.1080/13825585.2020.1859082

Grossmann, I. (2017). Wisdom in context. *Perspectives on Psychological Science, 12*(2), 233–257. https://doi.org/10.1177/1745691616672066

Hamilton, L. J., Gourley, A. N., & Krendl, A. C. (2022). They cannot, they will not, or we are asking the wrong questions: Re-examining age-related decline in social cognition. *Frontiers in Psychology, 13*, 894522. https://doi.org/10.3389/fpsyg.2022.894522

Harada, C. N., Love, M. C. N., & Triebel, K. L. (2013). Normal cognitive aging. *Clinics in Geriatric Medicine, 29*(4), 737–752. https://doi.org/10.1016/j.cger.2013.07.002

Hertzog, C., Pearman, A., Lustig, E., & Hughes, M. (2021). Fostering self-management of everyday 3memory in older adults: A new intervention approach. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.560056

Introzzi, I., Zamora, E. V., Aydmune, Y., Richard's, M. M., Comesaña, A., & Juric, L. C. (2020). The change processes in selective attention during adulthood. Inhibition or processing speed? *The Spanish Journal of Psychology, 23*. https://doi.org/10.1017/sjp.2020.41

Jacques, P. L., & Levine, B. (2007). Ageing and autobiographical memory for emotional and neutral events. *Memory, 15*(2), 129–144. https://doi.org/10.1080/09658210601119762

Jones, W. E., Benge, J. F., & Scullin, M. K. (2021). Preserving prospective memory in daily life: A systematic review and meta-analysis of mnemonic strategy, cognitive training, external memory aid, and combination interventions. *Neuropsychology, 35*(1), 123. https://dx.doi.org/10.1037/neu0000704

Kennedy, Q., Mather, M., & Carstensen, L. L. (2004). The role of motivation in the age-related positivity effect in autobiographical memory. *Psychological Science, 15*(3), 208–214. https://doi.org/10.1111/j.0956-7976.2004.01503011.x

Kinugawa, K., Schumm, S., Pollina, M., Depré, M., Jungbluth, C., Doulazmi, M., Sebban, C., Zlomuzica, A., Pietrowsky, R., Pause, B. M., Mariani, J., & Dere, E. (2013). Aging-related episodic memory decline: Are emotions the key? *Frontiers in Behavioral Neuroscience, 7*. https://doi.org/10.3389/fnbeh.2013.00002

Lalla, A., Tarder-Stoll, H., Hasher, L., & Duncan, K. (2022). Aging shifts the relative contributions of episodic and semantic memory to decision-making. *Psychology and Aging, 37*(6), 667–680. https://doi.org/10.1037/pag0000700

Li, W., Yang, W., Li, W., Li, Y., Wei, D., Li, H., Qiu, J., & Zhang, Q. (2015). Brain structure and resting-state functional connectivity in university professors with high academic achievement. *Creativity Research Journal, 27*(2), 139–150. https://doi.org/10.1080/10400419.2015.1030311

Marrero-Polegre, D., Finke, K., Roaschio, N., Haupt, M., Reyes-Moreno, C., & Ruiz-Rizzo, A. L. (2023). Lower visual processing speed relates to greater subjective cognitive complaints in community-dwelling healthy older adults. *Frontiers in Psychiatry, 14*, 1063151. https://doi.org/10.3389/fpsyt.2023.1063151

Marsiske, M., & Margrett, J. A. (2006). Everyday problem solving and decision making. In *Elsevier eBooks* (pp. 315–342). https://doi.org/10.1016/b978-012101264-9/50017-3

May, C. P., Hasher, L., & Foong, N. (2005). Implicit memory, age, and time of day. *Psychological Science, 16*(2), 96–100. https://doi.org/10.1111/j.0956-7976.2005.00788.x

Nyberg, L. (2016). Functional brain imaging of episodic memory decline in ageing. *Journal of Internal Medicine, 281*(1), 65–74. https://doi.org/10.1111/joim.12533

Papadopoulos, T. C., Georgiou, G. K., Deng, C., & Das, J. P. (2018). The structure of speed of processing across cultures. *Advanced Cognitive Psychology, 14*(3), 112–125. https://doi.org/10.5709/acp-0243-7

Pliatsikas, C., Veríssimo, J., Babcock, L., Pullman, M., Glei, D. A., Weinstein, M., Goldman, N., & Ullman, M. T. (2018). Working memory in older adults declines with age, but is modulated by sex and education. *Quarterly Journal of Experimental Psychology, 72*(6), 1308–1327. https://doi.org/10.1177/1747021818791994

Roediger, H. L., & Marsh, E. J. (2003). Episodic and autobiographical memory. *Handbook of psychology: Experimental psychology, 4*, 475–497. https://doi.org/10.1002/0471264385.wei0417

Salthouse, T. A. (2000). Aging and measures of processing speed. *Biological Psychology, 54*(1–3), 35–54. https://doi.org/10.1016/s0301-0511(00)00052-1

Sharma, S., & Babu, N. (2017). Interplay between creativity, executive function and working memory in middle-aged and older adults. *Creativity Research Journal, 29*(1), 71–77. https://doi.org/10.1080/10400419.2017.1263512

Srokova, S., Hill, P. F., & Rugg, M. D. (2022). The retrieval-related anterior shift is moderated by age and correlates with memory performance. *The Journal of Neuroscience, 42*(9), 1765–1776. https://doi.org/10.1523/jneurosci.1763-21.2021

Sternberg, R. J. (2005). Older but not wiser? The relationship between age and wisdom. *Ageing International, 30*(1), 5–26. https://doi.org/10.1007/BF02681005

Strough, J., Hicks Patrick, J., Swenson, L. M, Cheng, S., & Barnes, K. A. (2003). Collaborative everyday problem solving: Interpersonal relationships and problem dimensions. *The International Journal of Aging & Human Development, 56*(1), 43–66. https://doi.org/10.2190/Y3XN-RW1A-7EWT-KXTC

Thornton, W. J. L., & Dumke, H. A. (2005). Age differences in everyday problem-solving and decision-making effectiveness: A meta-analytic review. *Psychology and Aging, 20*(1), 85–99. https://doi.org/10.1037/0882-7974.20.1.85

Ticha, Z., Georgi, H., Schmand, B., Heissler, R., & Kopecek, M. (2023). Processing speed predicts SuperAging years later. *BMC Psychology, 11*(1), 34. https://doi.org/10.1186/s40359-023-01069-7

Tucker-Drob, E. M., La Fuente J, D., Köhncke, Y., Brandmaier, A. M., Nyberg, L., & Lindenberger, U. (2022). A strong dependency between changes in fluid and crystallized abilities in human cognitive aging. *Science Advances, 8*(5). https://doi.org/10.1126/sciadv.abj2422

Veríssimo, J., Verhaeghen, P., Goldman, N., Weinstein, M., & Ullman, M. T. (2022). Evidence that ageing yields improvements as well as declines across attention and executive functions. *Nature Human Behaviour, 6*(1), 97–110. https://doi.org/10.1038/s41562-021-01169-7

Vonk, J. M. J., Higby, E., Nikolaev, A., Cahana-Amitay, D., Spiro, A., Albert, M. L., & Obler, L. K. (2020). Demographic effects on longitudinal semantic processing, working memory, and cognitive speed. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 75*(9), 1850–1862. https://doi.org/10.1093/geronb/gbaa080

15.4 Brain Disorders in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the types and characteristics of dementia
- Describe characteristics, detection, and treatment of Alzheimer's disease

Lillian had been a bit absent-minded all her life, so her family and friends didn't initially pay much attention to her memory lapses as she got older. However, it became obvious over time that Lillian's cognitive functioning was changing. She'd always had trouble remembering the names of her eight grandchildren, but now she didn't always recognize them, thinking they were neighborhood children. She had trouble making grocery lists and keeping track of what she already had, so she often had spoiled food in her refrigerator as a result. After Lillian missed several bill payments and fell victim to a phone scam, her daughter-in-law took control of her finances, and the family worried about whether she could continue to live in her home.

So far, you've observed that many normative cognitive declines occur in later life but don't typically interfere with older adults' ability to function independently. In this section, you will study nonnormative cognitive changes—specifically, types of dementia. Note that some people do not fit neatly into the category of either dementia or normative cognitive decline. The cognitive decline that is more severe than normative but below the threshold for a dementia-related diagnosis is called **mild cognitive impairment (MCI)**. While many individuals experiencing MCI don't progress to more severe cognitive decline, having MCI does place an individual at increased risk of later developing dementia (Etgen et al., 2011).

Dementia

An umbrella term for a wide variety of conditions characterized by damage to the brain, including cell death, is **dementia**. This neurological damage can interfere with older adults' daily functioning and ability to live independently. The specific symptoms vary across individuals and dementia types (National Institute on Aging, 2022). As noted in Table 15.2, the likelihood of experiencing dementia increases as we get older (Manly et al., 2022; Nianogo et al., 2021). Incidence rates vary somewhat across racial and ethnic groups, with Hispanic and non-Hispanic Black older adults showing higher rates of dementia than White older adults; recent estimates suggest that the percentages of people with dementia in these groups are roughly 14, 19, and 10 percent, respectively (Alzheimer's Association, 2024). Also, as you'll learn later, the risk factors for developing dementia may differ across these groups, and women are more likely to experience dementia than men. The reasons are unclear but is largely believed to be due to women having a longer life expectancy than men. Other factors, such as lower rates of smoking and cardiovascular disease, may also contribute (Alzheimer's Association, 2024; Beam et al., 2018; Nianogo et al., 2022; Scheltens et al., 2021; Tahami Monfared et al., 2022). Table 15.2 shows the percentage of individuals who have dementia, divided by age and sex (numbers may not add to 100 due to rounding).

Age (Years)	Percentage of Individuals with Dementia (%)
65–69	6
70–74	8
75–79	19
80–84	27
85–89	21

TABLE 15.2 Dementia across Ages and by Sex (source: Manly et al., 2022)

Age (Years)	Percentage of Individuals with Dementia (%)
90+	18
Sex	
Female	62
Male	38

TABLE 15.2 Dementia across Ages and by Sex (source: Manly et al., 2022)

Because dementia often develops slowly, identification and diagnosis may not be immediate. Symptoms may come on gradually and go unnoticed for several years. It may be difficult initially to tell the difference between normal age-related cognitive changes and those that indicate dementia. Also, in the earliest stages of dementia, older adults may be able to compensate for cognitive changes or perform well in front of family and loved ones for short periods of time (Alzheimer's Association, 2024; Tahami Monfared et al., 2022).

If an older adult approaches health-care providers with worries about cognitive declines, or a concerned family member does so on their behalf, the older individual will likely receive a dementia screening assessment testing vocabulary, spatial skills, memory, and language. One such screening is the Mini-Mental State Exam (Folstein et al., 1975), a short assessment with thirty scored components related to a variety of cognitive tasks. A score below twenty-four indicates that someone may be experiencing a cognitive impairment such as dementia (Folstein et al., 1975; Kurlowicz & Wallace, 1999).

LINK TO LEARNING

Health-care providers may use the Mini-Mental State Examination to screen for dementia (https://openstax.org/r/104DementiaScrn) in individuals. Individuals losing seven points or more may be experiencing dementia and may want to follow up with a trained health-care provider.

Dementia is often identified by symptoms such as cognitive performance, but additional information is needed before a diagnosis. For example, it is valuable to know whether a person has a history of alcohol overuse or head injuries, the cognitive decline is sudden or abrupt, or the person has a family history of dementia, because this could help establish what type of dementia the person has. Other issues can complicate the diagnosis (Figure 15.18). For example, depression, Lyme disease, sleep problems, infections, and certain vitamin deficiencies can cause short-term cognitive symptoms similar to dementia, as can side effects and interactions of multiple medications taken simultaneously. This last is particularly likely to be a problem for older adults, who tend to take more medications than other age groups (Alzheimer's Association, 2024). In the long term, research suggests that taking many medications simultaneously over time also increases the likelihood of developing dementia (Park et al., 2017).

FIGURE 15.18 People often turn to their physician if they are concerned about cognitive decline. (credit: modification of work "Airmen mentoring Afghan flight surgeons-medics DVIDS257654" by Staff Sgt. Manuel J. Martinez of United States Air Force/Wikimedia Commons, Public Domain)

Several types of dementia exist. They differ somewhat in their cause and symptoms, but all are characterized by cognitive impairment that worsens over time and represents more than the typical age-related cognitive changes discussed in 15.2 Health Risks in Late Adulthood. (A useful analogy is cancer; there are many types of cancer that vary in terms of location and cause, but all are caused by uncontrolled growth of cell tissue.) The most common type of dementia is Alzheimer's disease, which accounts for 50 to 70 percent of dementia cases, followed by vascular dementia and Lewy body dementia (Alzheimer's Association, 2024; Lethin, 2019; Niaongo et al., 2022; Scheltens et al., 2021; Tahami Monfared et al., 2022). Some individuals can be diagnosed with multiple forms of dementia.

Vascular Dementia

Vascular dementia is the second most common form of dementia. (Alzheimer's disease, the most common, is discussed later.) Vascular dementia's cognitive symptoms and declines are associated with blocked blood flow to the brain, typically the result of a stroke, that results in cell damage or death in the affected part of the brain. There are two major types of stroke.

- An **ischemic stroke** occurs when a blood clot prevents an area of the brain from receiving enough blood or oxygen. While ischemic strokes can be fatal, they can also occur as less severe mini-strokes that disrupt blood flow for only a short time, resulting in less severe symptoms that can sometimes go undetected.
- A **hemorrhagic stroke** tends to be more severe, often with a sudden onset, and is much more likely to be fatal. A blood vessel in the brain ruptures, resulting in bleeding that deprives an area of the brain of sufficient blood flow and oxygen.

All types of strokes are associated with a high risk of vascular dementia; however, not all stroke victims experience it (Kalaria et al., 2016). The cognitive problems associated with vascular dementia can occur suddenly or slowly worsen over time. Their nature varies widely, depending on the area of the brain that was affected; for example, a left-hemisphere stroke is more likely to produce difficulty with speech, because the left hemisphere typically contains the parts of the brain important for language use. Strokes often produce other symptoms, such as problems with balance and motor control and paralysis on one side of the body.

Insufficient flow of blood related to heart conditions including heart failure can result in **hypoxia**, which occurs when lack of oxygen damages body tissues. When this occurs in brain tissue, it can also contribute to vascular dementia (Calabrese et al., 2016). Risk factors for strokes, heart disease, and vascular dementia are all similar and include lack of exercise, an unhealthy diet, smoking, high alcohol consumption, high blood

pressure, and high cholesterol. Like the symptoms of stroke, cognitive problems associated with vascular dementia can improve over time if the underlying cause of the stroke or heart condition is addressed and no further damage to the brain occurs. If disruptions in blood flow continue, the dementia will also likely worsen (Alzheimer's Association, n.d.-a).

LIFE HACKS

Recognizing Signs of a Stroke

A stroke is a medical emergency, and the speed of response matters for many reasons. Stroke victims who are quickly treated in a hospital setting have a better chance of immediate survival and fewer physical limitations afterward (National Heart, Lung, and Blood Institute [NHLBI], 2023; Saver et al., 2013). They also demonstrate better cognitive outcomes.

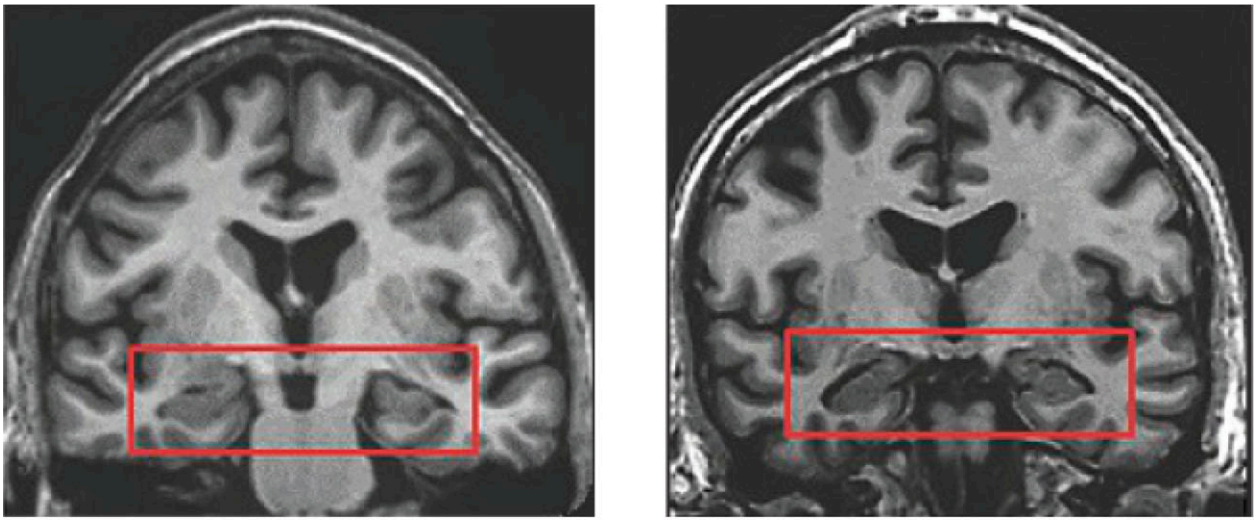
Health-care experts recommend using the acronym FAST (sometimes "BEFAST") to remember and identify the signs of a stroke. Consider it a medical emergency if you or someone you know experiences any of these common symptoms (Geiger, 2021; NHLBI, 2023):

- B—Problems with *balance* or coordination
- E—*Eye* problems such as a sudden onset of blurred or double vision or complete loss of vision
- F—*Facial* drooping or an uneven facial expression
- A—*Arm* weakness, numbness, or inability to raise both arms to an equal height
- S—Hard-to-understand *speech*, slurred speech, or difficulty speaking
- T—It's *time* to call for emergency medical services if a person has any one of the previous symptoms

These symptoms can often, but not always, be obvious. Women sometimes have different stroke symptoms than men, such as confusion, headache, or chest pain, so unusual sudden symptoms of any type should be addressed quickly even if they don't initially fit the typical pattern (Ali et al., 2022).

Lewy Body Dementia and Parkinson's Disease

Lewy body dementia is the third most common type of dementia. It's caused by deposits of a specific protein found in the cortex of the brain (Figure 15.19). These protein deposits, called Lewy bodies, have been linked to loss of the neurons responsible for producing neurochemicals, such as acetylcholine (which plays a role in attention, learning, and memory) and dopamine (related to experiencing pleasure, motivation, sleep, and cognition). The most common symptoms of Lewy body dementia are visual hallucinations, difficulty paying attention, and difficulty with thinking and judgment. These tend to change drastically over short periods of time, going from nearly nonexistent to severe and back again without any apparent reason. Other symptoms are related to motor skills and include stiffness, slow movement, and shaking (Orad & Shiner, 2022).



(a) Control (b) Lewey Body Dementia

FIGURE 15.19 (a) This image shows a healthy brain with the hippocampus outlined in red. (b) In this image of a brain afflicted with Lewy body dementia, notice that the hippocampus (inside the red box) is smaller, indicating that brain tissue has died. (credit a and b: modification of work "MRI Alzheimer Disease and Dementia with Lewy Bodies" by McKeith IG, Boeve BF, Dickson DW, et al./Wikimedia Commons, CC BY 4.0)

Lewy body dementia is difficult to predict because its cause is unclear. Though the risk increases with age, research has not identified any behavioral or lifestyle risk factors. The condition is progressive and fatal, with no effective treatment or cure.

Parkinson's disease is also characterized by damage to the neurons responsible for dopamine production and shares many of the physical symptoms of Lewy body dementia, such as stiffness, shaking/trembling, and slow movement. Many patients with Parkinson's disease never develop dementia, however, and others do so only in the disease's later stages. Research indicates there is a connection and overlap between Lewy body dementia and Parkinson's disease dementia, as they both involve the same Lewy body proteins, however, work is still being done to understand this relationship (Haider et al., 2023; Huang, 2023; National Institute on Aging, 2021).

Alzheimer's Disease

Estimates indicate that roughly fifty-five million people worldwide have Alzheimer's disease (Alzheimer's Association, 2024), the most common form of dementia. **Alzheimer's disease** is a progressive and fatal form of dementia that affects memory first, before limiting other cognitive abilities and eventually motor skills. Typical life expectancy varies because people are diagnosed at different stages of the disease, but most live six to ten years after noticeable symptoms develop (Scheltens et al., 2021). Its combination of genetic, environmental, and lifestyle factors make Alzheimer's disease very difficult to predict. The biggest risk factor is age, especially after eighty years. Generally, a healthy diet, regular exercise, and not smoking can reduce the likelihood of developing the disease (Scheltens et al., 2021).

Characteristics and Diagnosis of Alzheimer's Disease

Currently, the diagnosis of Alzheimer's disease relies on a combination of clinical observations and medical testing. Professionals can distinguish between a clinical diagnosis based on symptoms and performance on cognitive tests, and a biological diagnosis based on the presence of certain pathological elements in brain tissue. You'll learn about the latter approach first.

The *amyloid plaques* characteristic of the disease are believed to form in the brain due to elevated levels of a naturally occurring protein called amyloid precursor protein. As levels of this protein increase, fragments of it

gather between neurons, forming plaques that have been linked to cell death and are also believed to interfere with the functioning of neurons. Within the neurons of people with Alzheimer's disease, threads of the naturally occurring protein tau become twisted, forming *neurofibrillary tangles* that can interfere with cellular functioning and also contribute to cell death (Alzheimer's Association, 2024; National Institute on Aging, 2017) (Figure 15.20). Death of brain tissue in certain areas, especially the hippocampus (Jack et al., 2018), also occurs.

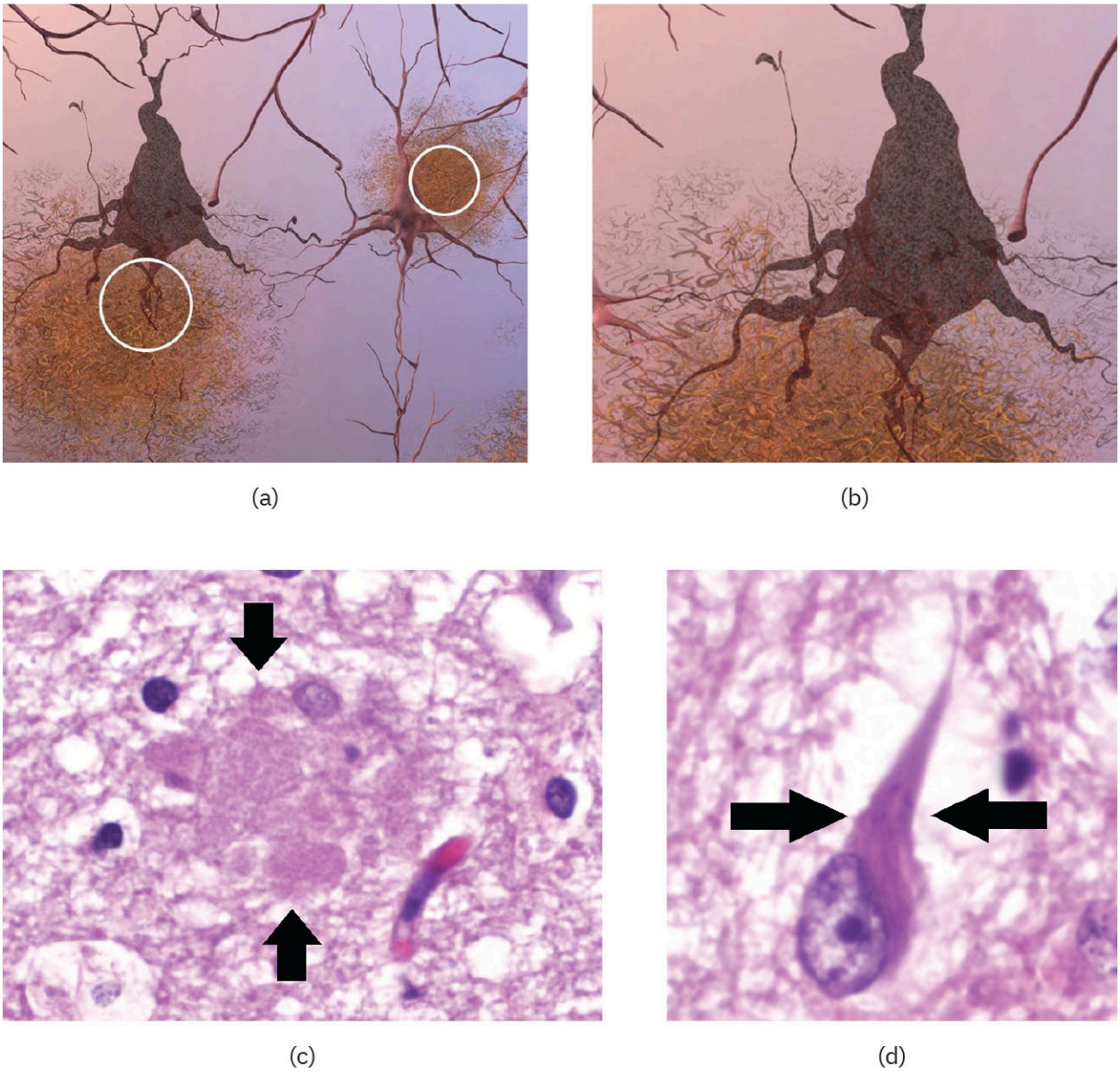


FIGURE 15.20 (a) Plaques are clusters of protein fragments that form between neurons. (b) Neurofibrillary tangles are twisted strands of protein. Micrographs show (c) plaques and (d) tangles in the brain of an individual with Alzheimer's. (credit a and b: ©2023 Alzheimer's Association. www.alz.org. All rights reserved. Illustrations by Stacy Jannis. Used with permission; credit c: modification of work "Histopathology of amyloid plaque in Alzheimer's disease – annotated" by Mikael Häggström/Wikimedia Commons, CC0 1.0; credit d: modification of work "Histopathology of neurofibrillary tangles in Alzheimer's disease – annotated" by Mikael Häggström/Wikimedia Commons, CC0 1.0)

These changes appear with increasing frequency in most individuals as they get older. They may be an aspect of primary aging and typically do not interfere with functioning. However, as they increase beyond what's

considered normative, they may produce MCI and eventually Alzheimer's disease (Ganz et al., 2018; Guillozet et al., 2003; Tahami Monfared et al., 2022), an example of secondary aging. Changes in the body's insulin response may also be a factor. The risk of type 2 diabetes increases with age, and people with type 2 diabetes consistently show cognitive declines. Some research has thus proposed the existence of "type 3 diabetes" caused by neurons in the brain becoming insulin resistant. However, this is not currently an official medical diagnosis, and it's unclear whether the association between insulin resistance and dementia is caused by diabetes damaging neurons or whether a variant of the *APOE4* gene, sometimes called the "Alzheimer's gene," interferes with the way the brain processes insulin (Janoutová et al., 2022; Zhao et al., 2017).

An issue with the biological diagnosis of Alzheimer's disease is that traditionally, detecting the presence of plaques and tangles required examining the patient's brain tissue under a microscope, which could be done only at autopsy. Dead brain tissue can be detected on living patients' brain scans but can be caused by several different factors, so this imaging isn't specific enough to indicate Alzheimer's disease (Jack et al., 2024). This is why many cases of Alzheimer's disease are diagnosed through clinical means. The clinical diagnosis rules out other potential causes like stroke, looks for the presence or absence of certain symptoms like visual hallucinations, and compiles a medical history to check for factors like previous head injuries, chronic alcoholism, or untreated infections, all of which can produce dementia symptoms. This strategy typically leads to a diagnosis of "probable" or "possible" Alzheimer's disease, but it isn't always accurate. Up to 30 percent of people with a clinical diagnosis of Alzheimer's disease don't have signs of plaques and tangles, and a similar percentage of people with plaques and tangles never develop symptoms of Alzheimer's disease (Jack et al., 2018). It's estimated that Alzheimer's disease may go undiagnosed as much as 50 percent of the time (Alzheimer's Association, 2024; Tahami Monfared et al., 2022).

However, the diagnostic approach may be changing. Technology now exists to identify the presence of amyloid and tau proteins in cerebrospinal fluid, and positron emission tomography scans can locate amyloid plaques in the brain (Alzheimer's Association, 2024). A blood test to detect amyloid protein is also being developed (Barthélemy et al., 2024; Schindler et al., 2019). Genetic testing can identify people at increased risk for Alzheimer's disease, and professionals can use that information to closely monitor their cognitive health. In the near future, scientists may be able to rely more on biological diagnosis of Alzheimer's disease and achieve more accurate results (Jack et al., 2018; Scheltens et al., 2021).

Types of Alzheimer's Disease

Alzheimer's disease may exist in different forms. Early-onset disease is a very rare form characterized, as its name suggests, by symptoms that occur earlier than typical, before age sixty-five years and sometimes decades earlier. This version has been associated with specific risk factors, such as having Down syndrome. Other cases have been linked to mutations of three different dominant genes and thus appear to be entirely genetic. Having a parent with this type of early-onset Alzheimer's disease gives you a 50 percent chance of carrying one of the genes and developing the disease at a younger age than typical. These genetic variations also appear to be more common in Black individuals than in White and Indigenous individuals (Alzheimer's Association, 2024). While routine genetic screening does not test for the genes, people with a strong family history of Alzheimer's disease at young ages can be tested to see whether they carry them (National Institute on Aging, 2023).

Most cases of Alzheimer's disease are considered late-onset and occur after age sixty-five years. Risk increases with age, and 80 percent of all Alzheimer's patients are diagnosed after age eighty years. This form of the disease is more difficult to predict, but it is also associated with a slower progression of symptoms and changes to the brain than early-onset Alzheimer's disease (Rabinovici, 2019).

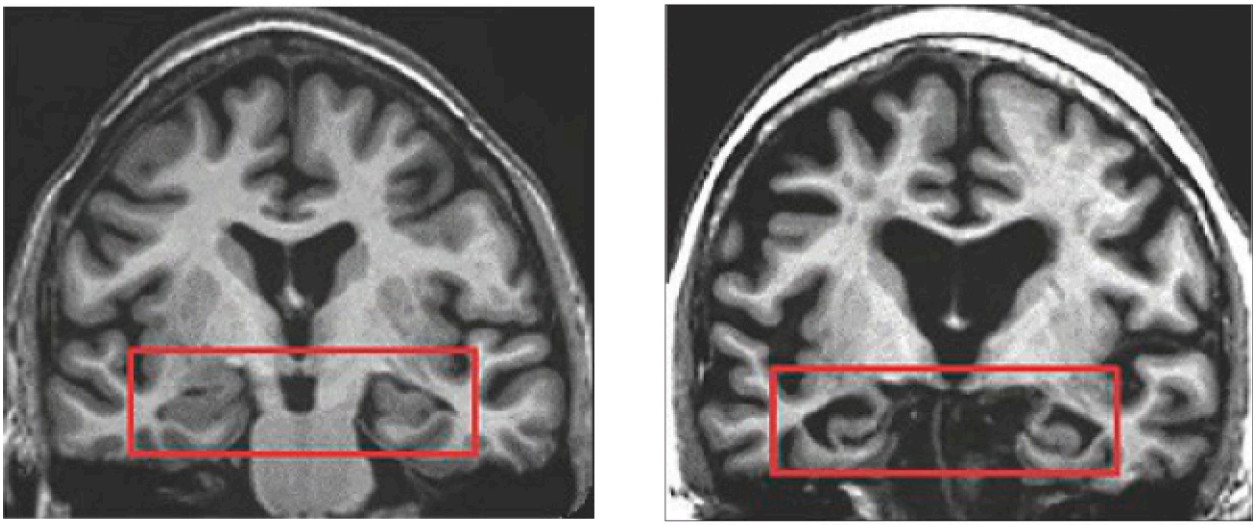
Symptoms and Progression of Alzheimer's Disease

Memory problems are usually the first symptom of Alzheimer's disease, although it can be hard to distinguish them from the typical memory problems associated with normal aging. In general, forgetting things a person

has known for a long time, like the names of loved ones or the route home from the store, or having a noticeable increase in forgetfulness is cause for concern. Some research suggests that problems in word recall (remembering the names of objects and people) and orientation (knowing where you are as well as things like the date and season) are specific early indicators of dementia, coming before impairment of other cognitive functions like attention and executive function (Tahami Monfared et al., 2022).

Several large-scale research studies are currently trying to better grasp all aspects of Alzheimer's disease. For example, the Dallas Lifespan Brain Study is studying brain development at a wide range of ages, with the goal of better understanding both the risk factors for and the early development of Alzheimer's (Chan et al., 2014). Two other examples are the Religious Orders Study (which has a sample of nuns and priests) and the Rush Memory and Aging Project. Both examine cognitive ability, brain health, and other variables in differently aged adults over time. All participants also agree to organ donation after death so that irregularities in the brain, such as plaques and tangles, can be studied and associated with brain activity, cognitive functioning, and a variety of other variables (Bennett et al., 2018).

Thanks to these and other efforts, researchers understand a great deal about the symptoms and progression of Alzheimer's disease. Several studies have identified neurological changes that occur several years before any symptoms. For example, research using PET scans has been able to identify changes in brain activity four years before participants developed any symptoms. These include a pattern of more activity in the frontal cortex of the brain and less in the temporal and parietal cortexes. The declines in the temporal and parietal cortexes are believed to signal some of the earliest damage to the brain in the Alzheimer's disease process (Figure 15.21). Increased activity in the frontal cortex, in turn, is believed to be evidence of neuroplasticity, occurring as healthier parts of the brain compensate for the damaged area (Beason-Held et al., 2013; Choudhury et al., 2023; Raskin et al., 2015).



(a) Control (unaffected) (b) Alzheimer's Disease

FIGURE 15.21 Scans show the decrease in brain volume in the cortex (outer portions of the brain) and hippocampus (red box) when comparing (a) a healthy brain to (b) a brain with Alzheimer's disease. (credit a and b: modification of work "MRI Alzheimer Disease and Dementia with Lewy Bodies" by McKeith IG, Boeve BF, Dickson DW, et al./Wikimedia Commons, CC BY 4.0)

More recent research using magnetic resonance imaging has supported this earlier work, indicating that people eventually diagnosed with Alzheimer's disease show more loss of neurons in the temporal lobe than in other regions of the brain. Other types of dementia are characterized by other patterns of neuron loss; for example, Lewy body dementia appears to disproportionately affect the parietal lobe (Orad & Shiner, 2022).

In other words, before people have any cognitive or behavioral symptoms of Alzheimer's disease, the brain

seems to realize that certain areas are being damaged. As a result, the frontal lobes start working extra hard to pick up the slack, preventing any noticeable changes in cognitive ability. This trend continues until the damage accumulates and the frontal cortex is no longer able to compensate. Eventually, the frontal cortex starts to experience damage from Alzheimer's disease as well.

Indicators of Alzheimer's disease have been found outside the brain. Research suggests that declines in the sense of smell can predict the level of Alzheimer's disease–related pathology in the brain, such as the presence of plaques and tangles (Brai et al., 2020; Mi et al., 2023; Wilson et al., 2009). Amyloid that forms plaques has also been found in the retina of the eye, and its presence positively correlates with the degree of cognitive decline (Koronyo et al., 2023).

While changes in the brain, declines in the sense of smell, and the presence of amyloid in the eyes are potentially important clinical indicators of Alzheimer's disease, they are not the typical changes that families first notice. In early-stage Alzheimer's disease, individuals may have increased memory problems, such as difficulty finding the right words, forgetting information they recently learned, and more frequently forgetting where they left objects, but typically they can still function independently. The middle stage of the disease is the longest, typically lasting several years during which individuals require some assistance completing daily tasks. Memory problems are more severe, including difficulty remembering information relevant to their personal history. This stage of Alzheimer's is also linked to general confusion, wandering, sleep difficulty, difficulty with daily tasks such as bathing and dressing, and personality changes.

Another symptom common in mid-stage Alzheimer's disease is **sundowning**, a tendency for dementia symptoms to worsen in the evening. Individuals tend to become increasingly confused or agitated. They may pace or wander, exhibit increased aggression, and experience hallucinations, typically as night approaches but also throughout the night. Sundowning is frequently reported in institutional settings such as nursing homes. It is not completely understood, and there are a variety of theories about its potential causes (Cipriani et al., 2015). Communicating earlier in the day with loved ones who have dementia could increase the likelihood of having meaningful interactions.

The final stage of disease is the most debilitating. People have difficulty communicating or having conversations, they need assistance with ADLs, and they cannot independently care for themselves. Physical abilities also tend to decline, and individuals can lose the ability to walk, sit, or even swallow. Vulnerability to infectious disease such as pneumonia also increases. Due to the severity and scope of these symptoms, end-of-life care such as hospice is often needed (Alzheimer's Association, n.d.-b).

Treatment and Prevention of Alzheimer's Disease

A great deal of Alzheimer's research has focused on developing effective treatments, including medications meant to remove amyloid plaques from the brain (Srivastava et al., 2021), since their accumulation is believed to lead to the development of tangles. While most attempts have so far failed, some medications, such as aducanumab (Aduhelm), decrease amyloid plaques and reduce the rate of cognitive decline. Aducanumab was the first medication to receive FDA approval (in 2021). It did not reverse the disease but may have helped those at the earliest stages by slowing its progression. It had been linked to potentially serious side effects, too, including swelling of the brain (Woloshin & Kesselheim, 2022). This was the first medication to try to treat the disease and not just provide symptom management (Beshir et al., 2022; Karran & Strooper, 2022; Wang, 2023). However, research still has a long way to go in Alzheimer's treatment, as Aduhelm is being discontinued and will no longer be available by late 2024 (Alzheimer's Association, n.d.-c).

References

Ali, M., van Os, H. J. A., van der Weerd, N., Schoones, J. W., Heymans, M. W., Kruyt, N. D., Visser, M. C., & Wermer, M. J. H. (2022). Sex differences in presentation of stroke: A systematic review and meta-analysis. *Stroke, 53*(2), 345–354. https://doi.org/10.1161/STROKEAHA.120.034040

Alzheimer's Association. (2024). 2024 Alzheimer's disease facts and figures. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association, 20*(5), 3708–3821. https://doi.org/10.1002/alz.13809

Alzheimer's Association. (n.d.-a). Vascular Dementia. https://www.alz.org/alzheimers-dementia/what-is-dementia/types-of-dementia/vascular-dementia

Alzheimer's Association. (n.d.-b). Stages of Alzheimer's. https://www.alz.org/alzheimers-dementia/stages

Alzheimer's Association (n.d.-c). Aducanumab to be discontinued as an Alzheimer's treatment. https://www.alz.org/alzheimers-dementia/treatments/aducanumab

Barthélemy, N. R., Salvadó, G., Schindler, S. E., He, Y., Janelidze, S., Collij, L. E., Saef, B., Henson, R. L., Chen, C. D., Gordon, B. A., Li, Y., La Joie, R., Benzinger, T. L. S.,

Morris, J. C., Mattsson-Carlgren, N., Palmqvist, S., Ossenkoppele, R., Rabinovici, G. D., Stomrud, E., Bateman, R. J., & Hansson, O. (2024). Highly accurate blood test for Alzheimer's disease is similar or superior to clinical cerebrospinal fluid tests. *Nature Medicine, 30*(4), 1085–1095. https://doi.org/10.1038/s41591-024-02869-z

Beam, C. R., Kaneshiro, C., Jang, J. Y., Reynolds, C. A., Pedersen, N. L., & Gatz, M. (2018). Differences between women and men in incidence rates of dementia and Alzheimer's disease. *Journal of Alzheimer's Disease*, *64*(4), 1077–1083. https://doi.org/10.3233/jad-180141

Beason-Held, L. L., Goh, J. O. S., An, Y., Kraut, M. A., O'Brien, R., Ferrucci, L., & Resnick, S. M. (2013). Changes in brain function occur years before the onset of cognitive impairment. *The Journal of Neuroscience*, *33*(46), 18008–18014. https://doi.org/10.1523/jneurosci.1402-13.2013

Bennett, D. A., Buchman, A. S., Boyle, P. A., Barnes, L. L., Wilson, R. S., & Schneider, J. A. (2018). Religious orders study and rush memory and aging project. *Journal of Alzheimer's Disease*, *64*(s1), S161–S189. https://doi.org/10.3233/jad-179939

Beshir, S. A., Soorya, A., Parveen, A., Goh, S. S. L., Hussain, N., & Menon, V. B. (2022). Aducanumab therapy to treat Alzheimer's disease: A narrative review. *International Journal of Alzheimer's Disease, 2022*, 1–10. https://doi.org/10.1155/2022/9343514

Brai, E., Hummel, T., & Alberi, L. (2020). Smell, an underrated early biomarker for brain aging. *Frontiers in Neuroscience*, 14, 792. https://doi.org/10.3389/fnins.2020.00792

Calabrese, V., Giordano, J., Signorile, A., Ontario, M. L., Castorina, S., De Pasquale, C., Eckert, G. P., & Calabrese, E. J. (2016). Major pathogenic mechanisms in vascular dementia: Roles of cellular stress response and hormesis in neuroprotection. *Journal of Neuroscience Research*, *94*(12), 1588–1603. https://doi.org/10.1002/jnr.23925

Chan, M. Y., Park, D. C., Savalia, N. K., Petersen, S. E., & Wig, G. S. (2014). Decreased segregation of brain systems across the healthy adult lifespan. *Proceedings of the National Academy of Sciences of the United States of America*, *111*(46). https://doi.org/10.1073/pnas.1415122111

Choudhury, N., Chen, L., Al-Harthi, L., & Hu, X. T. (2023). Hyperactivity of medial prefrontal cortex pyramidal neurons occurs in a mouse model of early-stage Alzheimer's disease without β-amyloid accumulation. *Frontiers in Pharmacology, 14*, 1194869. https://doi.org/10.3389/fphar.2023.1194869

Cipriani, G., Lucetti, C., Carlesi, C., Danti, S., & Nuti, A. (2015). Sundown syndrome and dementia. *European Geriatric Medicine*, *6*(4), 375–380. https://doi.org/10.1016/j.eurger.2015.03.006

Etgen, T., Sander, D., Bickel, H., & Förstl, H. (2011). Mild cognitive impairment and dementia: The importance of modifiable risk factors. *Deutsches Ärzteblatt International*, *108*(44), 743.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state": A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12*(3), 189–198. https://doi.org/10.1016/0022-3956(75)90026-6

Ganz, A. B., Beker, N., Hulsman, M., Sikkes, S. A., Bank, N. N. B., Scheltens, P., Smit, A. B., Rozemüller, A. J., Hoozemans, J. J. M., & Holstege, H. (2018). Neuropathology and cognitive performance in self-reported cognitively healthy centenarians. *Acta Neuropathologica Communications*, *6*(1). https://doi.org/10.1186/s40478-018-0558-5

Geiger, D. (2021). *Know the signs of stroke—BE FAST*. Duke Health. https://www.dukehealth.org/blog/know-signs-of-stroke-be-fast

Guillozet, A. L., Weintraub, S., Mash, D. C., & Mesulam, M. (2003). Neurofibrillary tangles, amyloid, and memory in aging and mild cognitive impairment. *Archives of Neurology*, *60*(5), 729. https://doi.org/10.1001/archneur.60.5.729

Haider, A., Spurling, B. C., & Sánchez-Manso, J. C. (2023). Lewy body dementia. In *StatPearls*. StatPearls Publishing. https://pubmed.ncbi.nlm.nih.gov/29494048/

Huang, J. (2023, August 29). *Dementia with Lewy bodies and Parkinson disease dementia*. Merck Manuals Professional Edition. https://www.merckmanuals.com/professional/neurologic-disorders/delirium-and-dementia/dementia-with-lewy-bodies-and-parkinson-disease-dementia

Jack, C. R., Jr., Andrews, J. S., Beach, T. G., Buracchio, T., Dunn, B., Graf, A., Hansson, O., Ho, C., Jagust, W., McDade, E., Molinuevo, J. L., Okonkwo, O. C., Pani, L., Rafii, M. S., Scheltens, P., Siemers, E., Snyder, H. M., Sperling, R., Teunissen, C. E., & Carrillo, M. C. (2024). Revised criteria for diagnosis and staging of Alzheimer's disease: Alzheimer's Association Workgroup. *Alzheimer's & dementia: The journal of the Alzheimer's Association, 20*(8), 5143–5169. https://doi.org/10.1002/alz.13859

Jack, C. R., Jr, Bennett, D. A., Blennow, K., Carrillo, M. C., Dunn, B., Haeberlein, S. B., Holtzman, D. M., Jagust, W., Jessen, F., Karlawish, J., Liu, E., Molinuevo, J. L., Montine, T., Phelps, C., Rankin, K. P., Rowe, C. C., Scheltens, P., Siemers, E., Snyder, H. M., & Sperling, R. (2018). NIA-AA research framework: Toward a biological definition of Alzheimer's disease. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association, 14*(4), 535–562. https://doi.org/10.1016/j.jalz.2018.02.018

Janoutová, J., Machaczka, O., Zatloukalová, A., & Janout, V. (2022). Is Alzheimer's disease a type 3 diabetes? A review. *Central European Journal of Public Health, 30*(3), 139–143. https://doi.org/10.21101/cejph.a7238

Kalaria, R. N., Akinyemi, R., & Ihara, M. (2016). Stroke injury, cognitive impairment and vascular dementia. *Biochimica Et Biophysica Acta: Molecular Basis of Disease*, *1862*(5), 915–925. https://doi.org/10.1016/j.bbadis.2016.01.015

Karran, E., & De Strooper, B. (2022). The amyloid hypothesis in Alzheimer disease: New insights from new therapeutics. *Nature Reviews Drug Discovery*, *21*(4), 306–318. https://doi.org/10.1038/s41573-022-00391-w

Koronyo, Y., Rentsendorj, A., Mirzaei, N., Regis, G. C., Sheyn, J., Shi, H., Barrón, E., Cook-Wiens, G., Rodriguez, A., Medeiros, R., Paulo, J. A., Gupta, V. B., Kramerov, A. A., Ljubimov, A. V., Van Eyk, J. E., Graham, S., Gupta, V. K., Ringman, J. M., Hinton, D. R., . . . Koronyo-Hamaoui, M. (2023). Retinal pathological features and proteome signatures of Alzheimer's disease. *Acta Neuropathologica*, *145*(4), 409–438. https://doi.org/10.1007/s00401-023-02548-2

Kurlowicz, L., & Wallace, M. (1999). The mini-mental state examination (MMSE). *Journal of Gerontological Nursing*, *25*(5), 8–9.

Lethin, C., Hallberg, I. R., Renom-Guiteras, A., Verbeek, H., Saks, K., Stolt, M., Zabalegui, A., Soto-Martin, M., & Nilsson, C. (2019). Prevalence of dementia diagnoses not otherwise specified in eight European countries: a cross-sectional cohort study. *BMC Geriatrics*, *19*(1). https://doi.org/10.1186/s12877-019-1174-3

Manly, J. J., Jones, R. N., Langa, K. M., Ryan, L. H., Levine, D. A., McCammon, R. J., Heeringa, S. G., & Weir, D. R. (2022). Estimating the prevalence of dementia and mild cognitive impairment in the US. *JAMA Neurology*, *79*(12), 1242. https://doi.org/10.1001/jamaneurol.2022.3543

Mi, Y., Ma, X., Du, S., Du, C., Li, X., Tan, H., Zhang, J., Zhang, Q., Shi, W., Zhang, G., & Tian, Y. (2023). Olfactory function changes and the predictive performance of the Chinese Smell Identification Test in patients with mild cognitive impairment and Alzheimer's disease. *Frontiers in Aging Neuroscience, 15*, 1068708. https://doi.org/10.3389/fnagi.2023.1068708

National Heart, Lung, and Blood Institute (2023). *Stroke—Symptoms*. https://www.nhlbi.nih.gov/health/stroke/symptoms

National Institute on Aging. (2017). What happens to the brain in Alzheimer's disease? https://www.nia.nih.gov/health/what-happens-brain-alzheimers-disease

National Institute on Aging. (2021). What is Lewy body dementia? Causes, symptoms, and treatments. https://www.nia.nih.gov/health/what-lewy-body-dementia-causes-symptoms-and-treatments

National Institute on Aging. (2022). What is dementia? Symptoms, types, and diagnosis. https://www.nia.nih.gov/health/what-is-dementia#signs

National Institute on Aging. (2023). Alzheimer's disease genetics fact sheet. https://www.nia.nih.gov/health/alzheimers-disease-genetics-fact-sheet

Nianogo, R. A., Rosenwohl-Mack, A., Yaffe, K., Carrasco, A., Hoffmann, C. M., & Barnes, D. E. (2022). Risk factors associated with Alzheimer disease and related dementias by sex and race and ethnicity in the US. *JAMA Neurology, 79*(6), 584–591. https://doi.org/10.1001/jamaneurol.2022.0976

Orad, R. I., & Shiner, T. (2022). Differentiating dementia with Lewy bodies from Alzheimer's disease and Parkinson's disease dementia: An update on imaging modalities. *Journal of Neurology, 269*(2), 639–653. https://doi.org/10.1007/s00415-021-10402-2

Park, H. Y., Park, J. W., Song, H. J., & Sohn, H. S. (2017). The association between polypharmacy and dementia: A nested case-control study based on a 12-year longitudinal cohort database in South Korea. *PLOS ONE, 12*(1), e0169463. https://doi.org/10.1371/journal.pone.0169463

Rabinovici, G. D. (2019). Late-onset Alzheimer disease. *CONTINUUM: Lifelong Learning in Neurology*, *25*(1), 14–33. https://doi.org/10.1212/con.0000000000000700

Raskin, J., Cummings, J., Hardy, J., Schuh, K., & Dean, R. A. (2015). Neurobiology of Alzheimer's disease: Integrated molecular, physiological, anatomical, biomarker, and cognitive dimensions. *Current Alzheimer Research, 12*(8), 712–722. https://doi.org/10.2174/1567205012666150701103107

Saver, J. L., Fonarow, G. C., Smith, E. E., Reeves, M. J., Grau-Sepulveda, M. V., Pan, W., Olson, D. M., Hernandez, A. F., Peterson, E. D., & Schwamm, L. H. (2013). Time to treatment with intravenous tissue plasminogen activator and outcome from acute ischemic stroke. *JAMA*, *309*(23), 2480. https://doi.org/10.1001/jama.2013.6959

Scheltens, P., De Strooper, B., Kivipelto, M., Holstege, H., Chételat, G., Teunissen, C. E., Cummings, J. L., & van der Flier, W. M. (2021). Alzheimer's disease. *The Lancet*, *397*(10284), 1577–1590. https://doi.org/10.1016/s0140-6736(20)32205-4

Schindler, S. E., Bollinger, J. G., Ovod, V., Mawuenyega, K. G., Li, Y., Gordon, B. A., Holtzman, D. M., Morris, J. C., Benzinger, T. L. S., Xiong, C., Fagan, A. M., & Bateman, R. J. (2019). High-precision plasma β-amyloid 42/40 predicts current and future brain amyloidosis. *Neurology, 93*(17), e1647–e1659. https://doi.org/10.1212/WNL.0000000000008081

Srivastava, S., Ahmad, R., & Khare, S. K. (2021). Alzheimer's disease and its treatment by different approaches: A review. *European Journal of Medicinal Chemistry*, *216*, 113320. https://doi.org/10.1016/j.ejmech.2021.113320

Tahami Monfared, A. A., Byrnes, M. J., White, L. A., & Zhang, Q. (2022). Alzheimer's disease: Epidemiology and clinical progression. *Neurology and Therapy, 11*(2), 553–569. https://doi.org/10.1007/s40120-022-00338-8

Wang, Y. (2023). An insider's perspective on FDA approval of aducanumab. *Alzheimer's & Dementia: Translational Research & Clinical Interventions, 9*(2). https://doi.org/10.1002/trc2.12382

Wilson, R. S., Arnold, S. E., Schneider, J. A., Boyle, P. A., Buchman, A. S., & Bennett, D. A. (2009). Olfactory impairment in presymptomatic Alzheimer's disease. *Annals of the New York Academy of Sciences*, *1170*(1), 730–735. https://doi.org/10.1111/j.1749-6632.2009.04013

Woloshin, S., & Kesselheim, A. S. (2022). What to know about the Alzheimer drug Aducanumab (Aduhelm). *JAMA Internal Medicine, 182*(8), 892. https://doi.org/10.1001/jamainternmed.2022.1039

Zhao, N., Liu, C. C., Van Ingelgom, A. J., Martens, Y. A., Linares, C., Knight, J. A., Painter, M. M., Sullivan, P. M., & Bu, G. (2017). Apolipoprotein E4 impairs neuronal insulin signaling by trapping insulin receptor in the endosomes. *Neuron, 96*(1), 115–129.e5. https://doi.org/10.1016/j.neuron.2017.09.003

15.5 Successful Physical and Cognitive Aging in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able:

- Describe the concept of successful aging
- List behaviors and lifestyle choices that promote successful physical and cognitive aging
- Explain how normative aging and dementia relate to successful cognitive aging

Roberto never intended to keep working after he turned sixty years old, but at age sixty-two years, he's still a successful plumber with no signs of slowing down. He's delegated most of the harder physical work to his younger colleagues but still does physical labor two days a week and runs the business from his office the other three days. He enjoys the challenges of responding to emergencies and investigating the sources of problems, as well as all the social interaction that goes with the job. Roberto has learned to balance his work and professional lives to prevent burnout, and he deliberately carves out time for family activities and participation in his mosque Roberto and his family and coworkers agree that while he'll have to stop working eventually, there's no need for him to think about doing so right now.

What does it mean to age successfully? Traditionally, researchers studying this question considered cognitive and physical health, social or productive activities, and level of functioning (Rowe & Kahn, 1997). They later included goals such as avoiding disability and adding longevity, and subjective factors like enjoying life (Vaillant & Mukamal, 2001). Research has consistently identified four aspects of successful aging (Daniel, 2020; Rowe & Kahn, 1997; Kim & Park, 2017; Urtamo et al., 2019). They are health, physical ability, cognitive functioning, and psychological adaptation/social engagement. You'll learn about the first three in this section, and psychological adaptation/social engagement in Chapter 16 Social and Emotional Development in Late Adulthood (Age 60 and Beyond).

Research on Successful Physical Aging and Health

There is potentially good news when it comes to physical functioning and health in later life (Figure 15.22). For example, the concept of **compression of morbidity** suggests that a healthy lifestyle can extend life expectancy while decreasing time spent in poor health and/or a highly dependent state (Fries, 1983). In other words, having a healthy lifestyle may help us not only live longer but also be healthier while doing so. In fact, improving health has better outcomes for the individual than simply prolonging life (Friedman, 2020; Jivraj et al., 2020), and it also lowers health-care costs (Hajat & Stein, 2018; Scott et al., 2021).

FIGURE 15.22 A healthy lifestyle can include not just good diet and exercise but also participation in enjoyable activities and social interactions. (credit: "Dancing Lady" by "kennie143"/nappy, Public Domain)

IT DEPENDS

Compression of Morbidity

James Fries (1983) first introduced the idea of compression of morbidity, a result that occurs when the average age of onset of chronic disease and disability increases at a faster rate than increases in life expectancy. In other words, people live a longer life while also experiencing fewer years in states of poor health and dependence. Such a trend could drastically reduce the costs associated with caring for a rapidly growing population of older adults while also improving their quality of life, allowing them to maintain their independence for longer than ever. Compression of morbidity was introduced as a theoretical concept, however. What do the data suggest?

It turns out that it depends. Research related to compression of morbidity yields mixed results. Crimmins and Beltrán-Sánchez (2010) conducted a review of research on some of the serious diseases common in late life and concluded that the data did not support compression of morbidity. Specifically, the age at which many health problems occurred stayed stable despite increasing life expectancy, and the amount of time people experienced disease and functional losses lengthened. The researchers' conclusion was that people are living longer with health and functional limitations rather than delaying the onset of these problems.

Still, Fries and colleagues (2011) point to multiple longitudinal studies, some focused on healthy aging interventions or very healthy samples, that do support the idea of decreasing disability in older age. On a societal level, however, many major disease processes appear not to follow the trend. Perhaps more large-scale efforts to minimize risk factors for older adults through active, healthy lifestyles could result in the compression of morbidity on a societal level.

What factors might promote good health and physical ability in older people? It is well established that eating a diet high in fruits and vegetables, maintaining a healthy weight, ensuring proper hydration, and engaging in moderate or vigorous levels of exercise are all predictive of better physical health in later life (Buettner & Skemp, 2016; Evans & Cyr-Campbell, 1997; Herbert et al., 2022; Kreouzi et al., 2022; Poulain & Herm, 2022;

Sowa et al., 2016). Sleep that is good in quality and sufficient in duration has also been found to be predictive of better health in these years (McCrae et al., 2008; Sivertsen et al., 2021).

Longitudinal research suggests that health-related tendencies and characteristics in middle adulthood, such as high blood pressure, are also predictive of later health outcomes (Perrig-Chiello et al., 2009). Even childhood experiences have been correlated with health in later life. Older individuals who had experienced traumatic events in childhood, such as abuse or exposure to substance abuse, later had higher incidences of heart disease, cancer, and many other chronic health conditions. This positive correlation is likely due to a combination of socioeconomic factors and riskier health behaviors throughout the lifespan (Merrick et al., 2019).

Another component of successful aging (Kim & Park, 2017) is maintaining physical functioning. Physical activity has been associated with many positive outcomes, such as better health, less stress, and better cognitive functioning. Current levels of physical activity may also predict future physical activity. Longitudinal research suggests that the combination of physical ability, activity, and nutrition in the earlier part of late adulthood is predictive of physical abilities and mobility (ability to walk) ten years later (Idland et al., 2012; Reis, 2020). Overall, research consistently suggests that the best thing you can do to increase the odds of aging successfully is to eat a healthy diet and exercise regularly. An unhealthy diet and sedentary lifestyle may even accelerate age-related declines in health and physical functioning.

INTERSECTIONS AND CONTEXTS

Physical Fitness in Late Adulthood

Many people associate aging with decreased physical activity. Is it therefore safe to assume that an older adult is likely to have a lot of limitations regarding what they can achieve physically?

No. Many older adults exercise regularly and are in great physical shape. They may not be as capable as they were in their twenties, but they can maintain or even improve physical fitness well into later life. Largely, however, their success depends on how active they were in early and middle adulthood. It's easier to maintain fitness than create it.

Physical activity can initially be uncomfortable and painful, but as the body gets used to activity, the pain and discomfort decrease. Older adults who aren't used to being active may thus need extra encouragement to keep up with it, especially since normative aging often brings joint pain and loss of flexibility and stamina.

While ordinary exercise and physical activity appear sufficient to keep most people healthy, some strive to achieve impressive physical accomplishments during their later years. The Appalachian Trail is a backpacking hike that stretches nearly 2,200 miles, starting in Georgia and ending in Maine. People who attempt the entire trail in one year, which requires hiking consistently for about six months and averaging 14 to 20 miles a day, are considered "through-hikers." Only one in four through-hikers successfully complete this challenging trek (Appalachian Trail Conservancy, 2022). An eighty-three-year-old going by the trail name of Nimblewill Nomad recently broke the record of oldest successful through-hiker, set just four years earlier by a hiker calling himself Grey Beard (then eighty-two years old).

Research on Brain Health

How do we keep our brain healthy as we age? While behavioral and lifestyle characteristics have not been linked to early-onset Alzheimer's disease or Lewy body dementia, a recent comprehensive review of research estimated that around 40 percent of dementia cases were associated with risk factors like high blood pressure and obesity that can be minimized or controlled with a healthy diet and regular exercise (Alzheimer's Association, 2024; Livingston et al., 2020).

Different characteristics across the lifespan are both predictive of dementia and changeable. Research by

Livingston and colleagues (2020) identifies which potentially modifiable risk factors are associated with different life stages, as well as the percentage reduction in dementia prevalence if that risk factor is eliminated (Table 15.3). For example, not smoking in late life reduces your risk of developing dementia by 5 percent. According to this research, about 40 percent of risk factors associated with developing dementia are potentially controllable, suggesting that throughout our lifespan, we can reduce our likelihood of experiencing it.

Life Stage	Risk Factor	Percentage Reduction
Early life	Less education	7%
Midlife	Hearing loss	8%
	Traumatic brain injury	3%
	Hypertension	2%
	Alcohol consumption	1%
	Obesity	1%
Later life	Smoking	5%
	Depression	4%
	Social isolation	4%
	Physical inactivity	2%
	Air pollution	2%
	Diabetes	1%

TABLE 15.3 Risk Factors Associated with Dementia (source: Livingston et al., 2020)

These risk factors aren't exhaustive. Other potentially modifiable risk factors for dementia are sleep problems, vitamin deficiencies, and poor oral health (Alzheimer's Association, 2024; Crane et al., 2013; Livingston et al., 2020; Nianogo et al., 2022; Zhang et al., 2021). Many of these can affect aspects of health other than cognitive functioning, so addressing any of them may benefit us in multiple ways. In some cases, we don't even need a formal diagnosis to have increased dementia risk; for example, some research has demonstrated that even in people who do not have diabetes, higher blood glucose levels are associated with higher dementia risk (Crane et al., 2013). Thus, controlling factors such as diet and activity levels, and keeping blood glucose levels in a healthy range, may lower dementia risk even if we don't develop diabetes.

Another positive step, and one that might surprise you, is protecting your hearing throughout adulthood. Hearing loss may contribute to stress, social isolation, and lack of environmental stimulation, all of which are already linked to dementia (Huang et al., 2023; Zhang et al., 2021). Hearing loss has also been associated with cognitive decline and an increase in dementia risk (Livingston et al., 2020; Nianogo et al., 2022; Zhang et al., 2021). The reason for this connection is unknown, but hearing loss may be indicative of underlying problems with brain functioning and therefore a symptom of dementia rather than a cause.

Regardless of the cause, treating hearing loss, usually with hearing aids, can lower a person's risk of dementia (Livingston et al., 2020; Nianogo et al., 2022; Zhang et al., 2021). Someone showing memory problems and

confusion should have their hearing tested before assuming dementia may exist; they may simply not hear what others are saying.

Given the same number of dementia-related changes to the brain, some individuals may exhibit greater resistance to damage than others. These people have more **cognitive reserve**, characteristics that are protective against dementia by delaying onset and reducing symptoms. People with higher educational and occupational attainment earlier in life tend to have greater cognitive reserve, experiencing slower decline if they develop dementia, and with less severe symptoms. One potential explanation is that higher levels of education are predictive of higher verbal ability, which decreases the risk of dementia (Boyle et al., 2021; Nianogo et al., 2022; Tucker & Stern, 2011; Zhang et al., 2021). However, this also means that people who get less education, particularly those who don't complete high school, are at increased risk of dementia. This is particularly important for people of low socioeconomic status and marginalized groups such as people of color, who may lack opportunities to receive education (Nianogo et al., 2022).

High levels of aerobic exercise and cognitively stimulating activities have been found to increase cognitive reserve (Cheng, 2016; Nianogo et al., 2022; Zhang et al., 2021), as have engagement in creative activities and an active social life in later ages (Hansdottir et al., 2022; Zhang et al., 2021) (Figure 15.23). These may not only decrease the risk of experiencing dementia, they could also minimize the severity of any dementia a person has.

FIGURE 15.23 An active social life is one of the factors that can help increase cognitive reserve in later life. (credit: "U.S. Army Corps of Engineers Sacramento District retiree luncheon at Club Pheasant in West Sacramento on May 16, 2017" by U.S. Army Corps of Engineers Sacramento District/Wikimedia Commons, Public Domain)

Research on Successful Cognitive Aging

Many of the behaviors that help prevent dementia are also related to minimizing normative cognitive declines as well as enhancing overall health. For example, aerobic exercise is especially beneficial for slowing cognitive aging and maintaining cognitive ability (Gomez-Pinilla & Hillman, 2013; Nianogo et al., 2022; Zhang et al., 2021). Education, social engagement, giving up or avoiding smoking, and managing weight and blood glucose levels are also linked with successful cognitive aging (Alzheimer's Association, 2024; Nianogo et al., 2022; Zhang et al., 2021). These actions may benefit us in several ways. For example, participating in hobbies may reduce stress, provide cognitive stimulation, and increase and strengthen our social network, any one of which can be considered protective (Choi, 2019; Zhang et al., 2021).

Some research has suggested that following diets that are plant based and/or low in fat, sugar, and sodium may be beneficial (Zhang et al., 2023). One example is the Dietary Approaches to Stop Hypertension (DASH) diet (NHLBI, 2006), which emphasizes eating foods high in calcium, fiber, magnesium, potassium, and protein and low in salt and saturated fat. Although the DASH diet was initially developed to help people lower their blood pressure and cholesterol, some evidence exists that it may be helpful for promoting healthy cognitive function

(Zhang et al., 2021) (Figure 15.24).

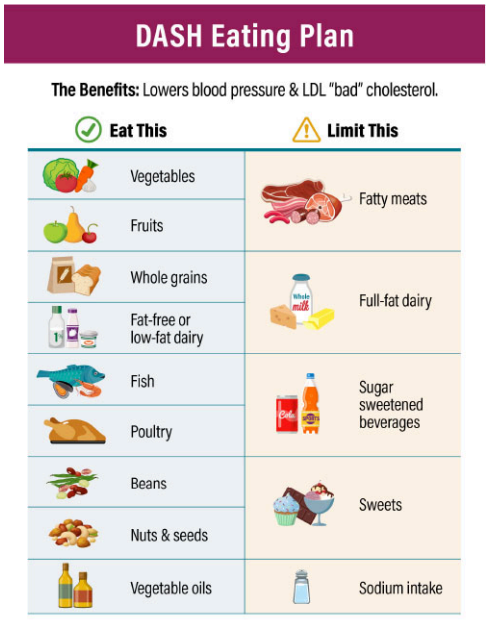


FIGURE 15.24 The DASH diet emphasizes fruits, vegetables, and protein from lean meats and beans, and encourages limiting consumption of foods high in fat, sugar, and salt. (credit: modification of work "DASH Eating Plan" by NHLBL/National Heart Lung, and Blood Institute, Public Domain)

Cognitive changes are minimal and specific to certain aspects of our cognition for most adults age sixty and beyond. In fact, research suggests that while cognitive changes are common, they are not universal or inevitable. For example, while fluid abilities tend to peak near the beginning of early adulthood before starting a steady decline, this trajectory may be somewhat avoidable. Some research supports the "use it or lose it" idea, which says fluid abilities start declining because we stop practicing them (just when we're completing our formal education, perhaps), while we tend to maintain or improve other cognitive skills we frequently use (Hultsch et al., 1999; van Balkom et al., 2020).

Consistent with this idea, older adults tend to rely more on crystallized abilities when solving problems, while younger adults lean toward fluid abilities (Artistico et al., 2019; Chen et al., 2017). If, however, we look for opportunities to use our fluid abilities, we may be able to prevent or at least slow the decline. For example, think back to the opening story in 15.3 Cognition and Memory in Late Adulthood, about Ahmad who began volunteering but had no crystallized skills or knowledge to rely on; instead, this activity required the use of fluid abilities to learn and apply new information.

Is it possible to use training programs to improve cognitive functioning, as physical exercise programs improve physical functioning? In general, it might be. In a research context, cognitive training programs typically ask participants to complete structured tasks such as recalling short lists of words, distinguishing between similar-sounding words, following a sequence of instructions, and identifying the pattern in a series of numbers (Ball et al., 2002; Mahncke et al., 2006). Sometimes the tasks are similar to everyday activities, such as reading a map or remembering items on a shopping list (Ball et al., 2002). More recently, researchers have explored using video games as cognitive training exercises (Belchior et al., 2019; Clemenson et al., 2020; Xu et al., 2020).

Results show that cognitive training programs, and games that require coordinating multiple skills, can be effective in improving older adults' performance on abilities that typically decline in later years, such as inductive reasoning, episodic memory, and even processing speed, and participants maintained these benefits over time (Ball et al. 2002; Belchior et al., 2019; Bherer et al., 2021; Bonnechère et al., 2021; Clemenson et al., 2020; Hausman et al., 2023; Mahncke et al., 2006; Rebok et al., 2014; Xu et al., 2020). However, while cognitive

training and "brain games" websites have been shown to improve processing speed and cognitive performance in older adults, stimulation through social interaction and participation in enjoyable activities is likely to be more realistically attainable and equally, if not more, beneficial (Küster et al., 2016).

References

Alzheimer's Association. (2024). 2024 Alzheimer's disease facts and figures. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association, 20*(5), 3708–3821. https://doi.org/10.1002/alz.13809

Appalachian Trail Conservancy. (2022, September 9). Thru-hiking. Appalachian Trail Conservancy. https://appalachiantrail.org/explore/hike-the-a-t/thru-hiking

Artistico, D., Cervone, D., & Garcia, C. M. (2019). My problems are solvable: Idiographic methods offset age differences in interpersonal problem solving among young, middle-aged, and older adults. *Frontiers in Psychology, 10*, 276. https://doi.org/10.3389/fpsyg.2019.00276

Ball, K. K., Berch, D. B., Helmers, K. F., Jobe, J. B., Leveck, M. D., Marsiske, M., Morris, J. N., Rebok, G. W., Smith, D. M., Tennstedt, S. L., Unverzagt, F. W., & Willis, S. L. (2002). Effects of cognitive training interventions with older adults. *JAMA, 288*(18), 2271. https://doi.org/10.1001/jama.288.18.2271

Belchior, P., Yam, A., Thomas, K. R., Bavelier, D., Ball, K. K., Mann, W. C., & Marsiske, M. (2019). Computer and videogame interventions for older adults' cognitive and everyday functioning. *Games for Health Journal, 8*(2), 129–143. https://doi.org/10.1089/g4h.2017.0092

Bherer, L., Gagnon, C., Langeard, A., Lussier, M., Desjardins-Crépeau, L., Berryman, N., Bosquet, L., Vu, T. T. M., Fraser, S., Li, K. Z. H., & Kramer, A. F. (2021). Synergistic effects of cognitive training and physical exercise on dual-task performance in older adults. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 76*(8), 1533–1541. https://doi.org/10.1093/geronb/gbaa124

Bonnechère, B., Klass, M., Langley, C., & Sahakian, B. J. (2021). Brain training using cognitive apps can improve cognitive performance and processing speed in older adults. *Scientific Reports, 11*, 12313. https://doi.org/10.1038/s41598-021-91867-z

Boyle, R., Knight, S. P., De Looze, C., Carey, D., Scarlett, S., Stern, Y., Robertson, I. H., Kenny, R. A., & Whelan, R. (2021). Verbal intelligence is a more robust cross-sectional measure of cognitive reserve than level of education in healthy older adults. *Alzheimer's Research & Therapy*, *13*(1). https://doi.org/10.21203/rs.3.rs-216364/v2

Buettner, D., & Skemp, S. (2016). Blue Zones: Lessons from the world's longest lived. *American Journal of Lifestyle Medicine, 10*(5), 318–321. https://doi.org/10.1177/1559827616637066

Chen, X., Hertzog, C., & Park, D. C. (2017). Cognitive predictors of everyday problem solving across the lifespan. *Gerontology, 63*(4), 372–384. https://doi.org/10.1159/000459622

Cheng, S-T. (2016). Cognitive reserve and the prevention of dementia: The role of 0physical and cognitive activities. *Current Psychiatry Reports*, *18*, 85. https://doi.org/10.1007/s11920-016-0721-2

Choi, W. (2019). Older adults' health information behavior in everyday life settings. *Library & Information Science Research, 41*(4), 100983. https://doi.org/10.1016/j.lisr.2019.100983

Clemenson, G. D., Stark, S. M., Rutledge, S. M., & Stark, C. E. L. (2020). Enriching hippocampal memory function in older adults through video games. *Behavioural Brain Research, 390*, 112667. https://doi.org/10.1016/j.bbr.2020.112667

Crane, P. K., Walker, R., Hubbard, R. A., Li, G., Nathan, D. M., Zheng, H., Haneuse, S., Craft, S., Montine, T. J., Kahn, S. E., McCormick, W., McCurry, S. M., Bowen, J. D., & Larson, E. B. (2013). Glucose levels and risk of dementia. *The New England Journal of Medicine, 369*(6), 540–548. https://doi.org/10.1056/NEJMoa1215740

Crimmins, E. M., & Beltrán-Sánchez, H. (2010). Mortality and morbidity trends: Is there compression of morbidity? *The Journals of Gerontology: Series B*, *66B*(1), 75–86. https://doi.org/10.1093/geronb/gbq088

Daniel, K. M. (2020). Best practices for promoting healthy aging. *Clinics in Geriatric Medicine, 36*(4), 713–718. https://doi.org/10.1016/j.cger.2020.06.012

Evans, W. J., & Cyr-Campbell, D. (1997). Nutrition, exercise, and healthy aging. *Journal of the American Dietetic Association*, *97*(6), 632–638. https://doi.org/10.1016/s0002-8223(97)00160-0

Friedman, S. M. (2020). Lifestyle (medicine) and healthy aging. *Clinics in Geriatric Medicine, 36*(4), 645–653. https://doi.org/10.1016/j.cger.2020.06.007

Fries, J. F. (1983). The compression of morbidity. *The Milbank Memorial Fund Quarterly*, *61*(3), 397–419. https://doi.org/10.2307/3349864

Fries, J. F., Bruce, B., & Chakravarty, E. F. (2011). Compression of morbidity 1980–2011: A focused review of paradigms and progress. *Journal of Aging Research*, 1–10. https://doi.org/10.4061/2011/261702

Gomez-Pinilla, F., & Hillman, C. H. (2013). The influence of exercise on cognitive abilities. *Comprehensive Physiology*, *3*(1), 403–428. https://doi.org/10.1002/cphy.c110063

Hajat, C., & Stein, E. (2018). The global burden of multiple chronic conditions: A narrative review. *Preventive Medicine Reports, 12*, 284–293. https://doi.org/10.1016/j.pmedr.2018.10.008

Hansdottir, H., Jonsdottir, M. K., Fisher, D E., Eiriksdottir, G., Jonsson, P. V., & Gudnason, V. (2022). Creativity, leisure activities, social engagement and cognitive impairment: The AGES-Reykjavík study. *Aging Clinical and Experimental Research*, *34*, 1027–1035. https://doi.org/10.1007/s40520-021-02036-1

Hausman, H. K., Alexander, G. E., Cohen, R., Marsiske, M., DeKosky, S. T., Hishaw, G. A., O'Shea, A., Kraft, J. N., Dai, Y., Wu, S., & Woods, A. J. (2023). Primary outcome from the augmenting cognitive training in older dults2oa study (ACT): A tDCS and cognitive training randomized clinical trial. *Brain Stimulation, 16*(3), 904–917. https://doi.org/10.1016/j.brs.2023.05.021

Herbert, C., House, M., Dietzman, R., Climstein, M., Furness, J., & Kemp-Smith, K. (2022). Blue Zones: Centenarian modes of physical activity: A scoping review. *Journal of Population Ageing*, 1–37. https://doi.org/10.1007/s12062-022-09396-0

Huang, A. R., Roth, D. L., Cidav, T., Chung, S.-E., Amjad, H., Thorpe, R. J., Jr, Boyd, C. M., & Cudjoe, T. K. M. (2023). Social isolation and 9-year dementia risk in community-dwelling Medicare beneficiaries in the United States. *Journal of the American Geriatrics Society, 71*(3), 765–773. https://doi.org/10.1111/jgs.18140

Hultsch, D. F., Hertzog, C., Small, B. J., & Dixon, R. A. (1999). Use it or lose it: Engaged lifestyle as a buffer of cognitive decline in aging? *Psychology and Aging, 14*(2), 245–263. https://doi.org/10.1037/0882-7974.14.2.245

Idland, G., Rydwik, E., Småstuen, M. C., & Bergland, A. (2012). Predictors of mobility in community-dwelling women aged 85 and older. *Disability and Rehabilitation*, *35*(11), 881–887. https://doi.org/10.3109/09638288.2012.712195

Jivraj, S., Goodman, A., Pongiglione, B., & Ploubidis, G. B. (2020). Living longer but not necessarily healthier: The joint progress of health and mortality in the working-age population of England. *Population Studies, 74*(3), 399–414. https://doi.org/10.1080/00324728.2020.1767297

Kim, S-H., & Park, S. (2017). A meta-analysis of the correlates of successful aging in older adults. *Research on Aging*, *39*(5), 657–677. https://doi.org/10.1177/0164027516656040

Kreouzi, M., Theodorakis, N., & Constantinou, C. (2022). Lessons learned from Blue Zones, lifestyle medicine pillars and beyond: An update on the contributions of behavior and genetics to wellbeing and longevity. *American Journal of Lifestyle Medicine*. https://doi.org/10.1177/15598276221118494

Küster, O. C., Fissler, P., Laptinskaya, D., Thurm, F., Scharpf, A., Woll, A., Kolassa, S., Kramer, A. F., Elbert, T., von Arnim, C. A F., & Kolassa, I.-T. (2016). Cognitive change is more positively associated with an active lifestyle than with training interventions in older adults at risk of dementia: a controlled interventional clinical trial. *BMC Psychiatry, 16*, 315. https://doi.org/10.1186/s12888-016-1018-z

Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S. G., Dias, A., Fox, N. C., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Ogunniyi, A., . . . Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet commission. *The Lancet*, *396*(10248), 413–446. https://doi.org/10.1016/s0140-6736(20)30367-6

Mahncke, H. W., Connor, B. B., Appelman, J., Ahsanuddin, O. N., Hardy, J. L., Wood, R. A., Joyce, N. M., Boniske, T., Atkins, S. M., & Merzenich, M. M. (2006). Memory enhancement in healthy older adults using a brain plasticity-based training program: A randomized, controlled study. *Proceedings of the National Academy of Sciences, 103*(33), 12523–12528. https://doi.org/10.1073/pnas.0605194103

McCrae, C. S., Wilson, N M., Lichstein, K. L., Durrence, H. H., Taylor, D. J., Riedel, B. W., & Bush, A. J (2008). Self-reported sleep, demographics, health, and daytime functioning in young old and old oldcommunity-dwelling 2seniors. *Behavioral Sleep Medicine*, *6*(2), 106–126. https://doi.org/10.1080/15402000801952906

Merrick, M. T., Ford, D. C., Ports, K. A., Guinn, A. S., Chen, J., Klevens, J., Metzler, M., Jones, C. M., Simon, T. R., Daniel, V. M., Ottley, P., & Mercy, J. A. (2019). Vital signs: Estimatede proportion of adult health problems attributable to adverse childhood experiences and implications for prevention—25 states, 2015–2017. *Morbidity and Mortality Weekly Report*, *68*(44), 999–1005. https://doi.org/10.15585/mmwr.mm6844e1

National Heart, Lung, and Blood Institute. (2006). *Your guide to lowering your blood pressure with DASH*. https://www.nhlbi.nih.gov/files/docs/public/heart/new_dash.pdf

Nianogo, R. A., Rosenwohl-Mack, A., Yaffe, K., Carrasco, A., Hoffmann, C. M., & Barnes, D. E. (2022). Risk factors associated with Alzheimer disease and related dementias by sex and race and ethnicity in the US. *JAMA Neurology, 79*(6), 584–591. https://doi.org/10.1001/jamaneurol.2022.0976

Perrig-Chiello, P., Jaeggi, S. M., Buschkuehl, M., Stähelin, H., & Perrig, W. J. (2009). Personality and health in middle age as predictors for well-being and health in old age. *European Journal of Ageing, 6*, 27–37. https://doi.org/10.1007/s10433-008-0102-8

Poulain, M., & Herm, A. (2022). Blue zoneZ: A model to live longer and better. In M. Poulain & J. Mackowicz (Eds.), *Positive ageing and learning from centenarians: Living longer and better–*. Routledge Taylor & Francis. https://doi.org/10.4324/9781003162216

Rebok, G. W., Ball, K., Guey, L. T., Jones, R. N., Kim, H.-Y., King, J. W., Marsiske, M., Morris, J. N., Tennstedt, S. L., Unverzagt, F. W., & Willis, S. L., for the ACTIVE Study

Group. (2014). Ten-year effects of the advanced cognitive training for independent and vital elderly cognitive training trial on cognition and everyday functioning in older adults. *Journal of the American Geriatrics Society, 62*(1), 16–24. https://doi.org/10.1111/jgs.12607

Reis, V. M. (2020). Effects of exercise on biomarkers in health and disease: Some s2new insights with special focus on extreme exercise and healthy ageing. *International Journal of Environmental Research and Public Health*, *17*(6), 1986. https://doi.org/10.3390/ijerph17061986

Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *Gerontologist*, *37*(4), 433–440. https://doi.org/10.1093/geront/37.4.433

Scott, A. J., Ellison, M., & Sinclair, D. A. (2021). The economic value of targeting aging. *Nature Aging, 1*, 616–623. https://doi.org/10.1038/s43587-021-00080-0

Sivertsen, B., Pallesen, S., Friborg, O., Nilsen, K. B., Bakke, Ø. K., Goll, J. B., & Hopstock, L. A. (2021). Sleep patterns and insomnia in a large population-based study of middle-aged and older adults: Thet Tromsø study 2015–2016. *Journal of Sleep Research, 30*(1), e13095. https://doi.org/10.1111/jsr.13095

Sowa, A., Tobiasz–Adamczyk, B., Topór-Mądry, R., Poscia, A., & Lal Milìa, D. I. (2016). Predictors of healthy ageing: Public health policy targets. *BMC Health Services Research, 16*(S5). 289 https://doi.org/10.1186/s12913-016-1520-5

Tucker, A. M., & Stern, Y. (2011). Cognitive reserve in aging. *Current Alzheimer Research*, *8*(4), 354–360. https://doi.org/10.2174/156720511795745320

Urtamo, A., Jyväkorpi, S. K., & Strandberg, T. E. (2019). Definitions of successful ageing: A brief review of a multidimensional concept. *Acta Biomedica: Atenei Parmensis, 90*(2), 359–363. https://doi.org/10.23750/abm.v90i2.8376

Vaillant, G. E., & Mukamal, K. (2001). Successful aging. *American Journal of Psychiatry, 158*(6), 839–847. https://doi.org/10.1176/appi.ajp.158.6.839

van Balkom, T. D., Van Denvd Heuvel, O. A., Berendse, H. W., Van Dervd Werf, Y. D., & Vriend, C. (2020). The effects of cognitive training on brain network activity and connectivity in aging and neurodegenerativen diseases: A systematic review. *Neuropsychology Review*, *30*, 267–286. https://doi.org/10.1007/s11065-020-09440-w

Xu, W., Liang, H.N., Baghaei, N., Berberich, B W., & Yue, Y. (2020). Health benefits of digital videogames for the aging population: A systematic review. *Games for Health Journal, 9*(6), 389–404. https://doi.org/10.1089/g4h.2019.0130

Zhang, X. X., Tian, Y., Wang, Z. T., Ma, Y. H., Tan, L., & Yu, J. T. (2021). The epidemiology of Alzheimer's disease modifiable risk factors and prevention. *The Journal of Prevention of Alzheimer's Disease, 8*, 313–321. https://doi.org/10.14283/jpad.2021.15

Key Terms

acute condition health condition that tends to occur quickly and lasts only a brief period of time
age-related macular degeneration blurring and potential loss of vision in the center of the field of vision as a result of damage to the central part of the retina (macula)
Alzheimer's disease most common form of dementia; progressive, fatal, and characterized by the presence of amyloid plaques and neurofibrillary tangles in the brain and affecting memory before limiting other cognitive abilities and eventually motor skills
autobiographical memory memories related to personal life and history, with both episodic and semantic components
cataract cloudy area on the typically clear lens of the eye caused by a buildup of protein
cellular clock theory theory that cells can divide to reproduce themselves only a limited number of times, and as they reach this number, the body is no longer able to replace old or damaged cells with new ones
chronic condition health condition that may develop slowly over time and last for a long duration
cognitive reserve characteristics that are protective against dementia by delaying onset and reducing symptoms
compression of morbidity idea that a healthy lifestyle can extend life expectancy while also decreasing the time we spend in poor health or a highly dependent state
dementia wide variety of conditions characterized by damage to the brain, including cell death that interferes with daily functioning and ability to live independently
dry eye syndrome eye condition that occurs when eyes don't produce enough tears
free radical theory theory that free radicals, unstable oxygen molecules that are a by-product of food metabolization, damage tissues or cells, and this damage accumulates as people get older
geropsychology subfield of psychology that focuses on enhancing the mental health of older adults
glaucoma vision impairment caused by increased pressure inside the eye and resulting damage to the optic nerve
hemorrhagic stroke event in which a blood vessel in the brain ruptures, resulting in bleeding that deprives an area of the brain of sufficient blood flow and oxygen that can be fatal
hormonal stress theory of aging (also, neuroendocrine theory) theory that as we age, stress hormones stay elevated longer after a stressful response, potentially contributing to aging-associated health problems like hypertension and diabetes
hypoxia condition in which lack of oxygen in body tissue causes damage
ischemic stroke event in which a blood clot prevents an area of the brain from receiving enough blood or oxygen
macula central part of the retina in the eye
Medicaid U.S. federal program that pays for some health-care costs of individuals with low income
Medicare U.S. federal program that pays for some health-care costs of older adults
mild cognitive impairment (MCI) cognitive decline that is more severe than normative but below the threshold for a dementia-related diagnosis
osteoporosis condition characterized by extensive loss of bone mass and weakening of the bones in later life
positivity effect tendency to remember things from our past more positively as we get older
presbycusis age-related hearing decline that starts with the inability to hear high-pitch frequencies
presbyopia age-related decline in vision due to stiffening of the lens that results in more difficulty seeing things that are close
primary aging natural healthy aging process that has not been accelerated or worsened as a result of disease
sarcopenia loss of muscle mass that occurs in later life
secondary aging aging that has been accelerated and worsened by disease processes, lifestyle choices, or environmental factors
sundowning tendency for dementia symptoms to worsen in the evening
telomere protective strand of DNA on the tip of each chromosome that becomes shorter each time a cell

divides until the cell is no longer able to divide any more

terminal decline accelerated and nonnormative declines in cognitive ability that can occur one to five years before death

tertiary aging more rapid and general declines that may occur in the months and years prior to death

universal health care system that makes health-care services accessible to all citizens with little or no out-of-pocket costs, because the government subsidizes the cost through taxes

vertigo condition that causes dizziness or the sensation of moving when still

wear and tear theory theory that the use of our bodies results in unrepaired damage that accumulates over time, resulting in aging

wisdom ability to use intellect and past experiences to make good decisions about the future

Summary

15.1 Physical Aging in Late Adulthood

- Possible causes to explain why people physically age focus on the effects of stress hormones, telomeres, free radicals, bodily wear and tear, and genetic variability.
- Muscle and bone mass decline throughout much of adulthood but more noticeably in later years.
- Declines in sensory functions such as vision and hearing may be problematic in later life.
- Several changes to the brain have been linked to decreased cognitive functioning in older age.
- Exercise plays an important role in minimizing age-related declines in muscle mass, bone mass, and cognitive ability.

15.2 Health Risks in Late Adulthood

- The likelihood of dealing with one or more chronic health problems increases with age.
- Chronic health conditions represent the majority of the leading causes of death, especially in countries with higher incomes and more access to health care.
- While the prevalence of mental health problems such as depression and anxiety decreases in later adulthood, many older adults still experience serious mental health problems.
- Countries have vastly different ways of funding health care and amounts individuals typically pay out of pocket.

15.3 Cognition and Memory in Late Adulthood

- Several cognitive abilities, such as processing speed, fluid intelligence, short-term and working memory, and episodic memory, decline in late adulthood.
- Other cognitive abilities, such as crystallized intelligence, implicit memory, semantic memory, and sometimes wisdom, increase or remain stable in late adulthood.
- Trends in the maintenance or decline of cognitive skills depend on factors such as age, sex, and the nature of skills being assessed.

15.4 Brain Disorders in Late Adulthood

- Dementia is a general term to describe a wide variety of conditions that all include damage to the brain.
- While getting an accurate and specific diagnosis related to dementia is challenging, Alzheimer's disease is the most common form, followed by vascular dementia.
- Early-onset Alzheimer's disease tends to be genetic with a more rapid progression, while late-onset occurs over age sixty-five years but becomes more common over age eighty years, with a slower progression.
- The progression of Alzheimer's disease brings increased impairment of cognitive skills, eventually affecting other behaviors such as self-care skills and language.

15.5 Successful Physical and Cognitive Aging in Late Adulthood

- Successful aging relies on maintaining health, physical functioning, cognitive functioning, social involvement, increased longevity, and enjoyment of life.

- A healthy diet, an active lifestyle, and engagement in cognitively challenging activities across the lifespan decrease the likelihood of experiencing physical disability and health problems in later life.
- Most older adults, even at very old ages, avoid significant cognitive declines associated with dementia, which is also evidence of successful cognitive aging.

Review Questions

1. According to the free radical theory, what contributes to physical aging?
   a. accelerating cellular clocks
   b. shortening of telomeres
   c. unstable oxygen molecules
   d. genetics influences

2. _____ is an age-related decline in bone mass, while _____ is an age-related loss of muscles mass.
   a. osteoporosis; sarcopenia
   b. arthritis; presbyopia
   c. sarcopenia; osteoporosis
   d. presbyopia; arthritis

3. Cognitive decline that is associated with dementia is an example of what type of aging?
   a. normative
   b. primary
   c. secondary
   d. tertiary

4. What is one of the most significant predictors of life expectancy in the United States?
   a. body mass index
   b. cultural background
   c. intelligence
   d. socioeconomic status

5. Older adults are more likely to experience _____ conditions but less likely to experience _____ conditions.
   a. acute; chronic
   b. respiratory; heart
   c. heart; respiratory
   d. chronic; acute

6. What is the relationship between age and the likelihood of experiencing anxiety and depression?
   a. Anxiety and depression are both more common and more devastating for older adults.
   b. Older adults are at increased risk of depression but less likely to experience anxiety.
   c. Older adults are at increased risk of anxiety but less likely to experience depression.
   d. Both depression and anxiety become less common in older age.

7. According to recent data (2020–2021), which chronic condition was the leading cause of death in the United States for people over age forty-five years?
   a. cancer
   b. COVID-19
   c. heart disease
   d. complications of diabetes

8. What is a characteristic of autobiographical memories?
   a. They include episodic memories only.
   b. They tend to get more positive with age.
   c. They include semantic memories only.
   d. They are very high in accuracy.

9. Which type of memory does not appear to be affected by aging?
   a. short-term
   b. working
   c. episodic
   d. implicit

10. Which type of memory has been found to overlap considerably with crystallized intelligence even though retrieval problems may increase with age?
   a. episodic
   b. autobiographical
   c. flashbulb
   d. semantic

11. What is the most common type of dementia, accounting for 50 to 70 percent of dementia cases?
   a. Alzheimer's disease
   b. Lewy body dementia
   c. dementia due to Parkinson's disease
   d. vascular dementia

12. What term describes general cognitive decline that is more severe than normative but below the threshold for a dementia-related diagnosis?
   a. amnestic delirium
   b. transient ischemic attack
   c. cerebrovascular accident
   d. mild cognitive impairment

13. In what type of dementia can cognitive declines stop and later improve if the underlying cause of symptoms is identified and treated?
   a. Alzheimer's disease
   b. Lewy body dementia
   c. Parkinson's disease
   d. vascular dementia

14. The primary neurological changes associated with Alzheimer's disease are the formation of which of the following?
   a. Lewy bodies and Golgi snares
   b. amyloid plaques and neurofibrillary tangles
   c. meninges and neuroblastomas
   d. bacterial and viral infections

15. Increased activity in the _____ lobe may be an early indicator of Alzheimer's disease as this part of the brain tries to compensate for damage in other areas.
   a. parietal
   b. temporal

c. frontal
d. occipital

16. How can we best describe the declines associated with normative cognitive aging?
a. large global declines that make it difficult for older adults to function without help
b. arising only after dementia symptoms become obvious
c. subtle and typically not interfering with the ability to live independently
d. abrupt transitions from high functioning to low functioning

17. Characteristics that protect against dementia by delaying onset and reducing symptoms are known as which of the following?
a. cognitive reserve
b. neurological redundancy
c. neuroplasticity
d. synaptic pruning

18. When solving problems, older adults tend to use _____ abilities, while younger adults tend to use _____ abilities.
a. fluid; crystallized
b. crystallized; fluid
c. convergent; divergent
d. divergent; convergent

19. Research has found that as much as 40 percent of dementia cases were caused by
a. telomere death and free readical acceleration in the brain
b. abnormalities in endocrine functioning and hormonal disruption
c. sleep inadequacies, like insomnia and obstructive apnea
d. modifiable behaviors, like high blood pressure and obesity

Check Your Understanding Questions

20. Describe the role of telomeres in cellular clock theory.

21. What is thought to be responsible for decreasing white matter volume in the brain during aging? Is this change related to any changes in cognition?

22. How does the United States compare to similarly affluent countries in its health-care costs and life expectancy?

23. What is Medicare and what purpose does it serve? Are there any gaps in Medicare coverage?

24. Describe whether and how implicit memories, such as knowing how to ride a bicycle, change in later life.

25. Does wisdom increase with age? Why or why not?

26. Compare and contrast an ischemic stroke and a hemorrhagic stroke.

27. Why does dementia often go undiagnosed for some period of time?

28. What does compression of morbidity mean?

29. How is hearing loss connected to dementia?

Personal Application Questions

30. Life expectancy has steadily increased worldwide due to better healthcare, improved living conditions,

and other factors. Reflect on your own habits and environment. How do you think these factors might influence your own life expectancy? What steps could you take to potentially increase your longevity and overall health as you age?

31. Different cultures have varying views on aging and elderly care. Reflect on how your culture or society views aging and the elderly. How do you think these cultural norms and values might influence your expectations for your own aging process and care in late adulthood?

32. Discuss the various theories of aging, including hormonal stress theory, free radical theory, cellular clock theory, and wear and tear theory. Explain which theory you find most compelling and why, using examples from research or personal observations.

33. Consider an older adult you know who is managing a chronic health condition, such as arthritis, diabetes, or heart disease. Reflect on how this condition affects their daily life. How do they balance maintaining their independence with managing their health?

34. Think about the mental health challenges that older adults might face, such as anxiety or depression. Have you noticed any examples of this in someone you know? How do they cope, and what support systems do they have in place?

35. Consider your own experiences with memory, such as remembering facts for a test versus recalling a personal event from years ago. How do you imagine these types of memories—semantic (facts) and episodic (events)—might change as people age? How might these changes affect day-to-day life in late adulthood?

36. Think of a situation where you sought advice from someone older than you, perhaps a parent, grandparent, or mentor. How did their life experience and wisdom shape the advice they gave you? Reflect on how wisdom might continue to develop as a person grows older and how this impacts problem-solving in everyday life.

37. Think about any older family members or acquaintances who have experienced memory changes. Based on what you've learned about mild cognitive impairment (MCI) and dementia, how do you think these changes might have affected their day-to-day life? How could you, or did you, help support them during these changes?

38. Given the potential side effects of Alzheimer's treatments like aducanumab (Aduhelm), reflect on how you would approach making medical decisions for yourself or a loved one. Would you be more focused on slowing disease progression, minimizing side effects, or maintaining quality of life? Explain your reasoning.

39. Think about what successful aging means to you. Based on what you've learned about the concept of successful aging, how does your definition compare to the four aspects researchers identified (health, physical ability, cognitive functioning, and psychological adaptation/social engagement)? Are there other factors you believe should be considered?

40. Reflect on your current lifestyle choices. Are there behaviors or habits that you think could impact your health and cognitive functioning as you age? Identify two behaviors you would like to change or improve, and explain how making these changes could help promote successful aging for you.

41. Consider the idea of cognitive reserve and the factors that contribute to it, such as education, social engagement, and physical activity. How do your current activities align with building cognitive reserve, and what changes could you make to improve your cognitive health in the future?

Essay Questions

42. From the perspective of an employee in an elder care facility, describe the physical changes that typically occur in late adulthood, such as declines in vision, hearing, and mobility. Discuss how these changes

affect the daily activities and overall quality of life of the residents. Additionally, explore the strategies and interventions that can be employed within the facility to mitigate these impacts and improve the residents' well-being.

43. Analyze how health-care costs influence the decisions and lifestyle of older adults in the United States. How do factors such as access to Medicare, supplemental insurance, and out-of-pocket expenses impact the choices older adults make about their health? Imagine you are a financial advisor helping an elderly couple navigate their health-care expenses. What strategies would you recommend to ensure they maintain their financial security while also addressing their health needs?

44. Wisdom is often associated with aging, yet research shows that wisdom does not necessarily increase with age for everyone. Reflect on how life experiences contribute to the development of wisdom and discuss how wisdom can be a valuable asset in everyday problem-solving and decision-making during late adulthood.

45. Memory decline is often associated with aging, but not all types of memory are equally affected. Compare and contrast the changes in short-term, working, and long-term memory during late adulthood. How do these changes influence the day-to-day activities and quality of life for older adults?

46. Discuss the ethical considerations involved in genetic testing for Alzheimer's disease. What are the potential benefits and risks, both for individuals and for society, of knowing whether someone carries genetic markers associated with the disease? Based on your analysis, would you consider undergoing genetic testing for Alzheimer's disease yourself? Why or why not?

47. The compression of morbidity theory suggests that with a healthy lifestyle, the period of poor health and dependence at the end of life can be shortened. Discuss this concept and explain how adopting healthy behaviors throughout life might lead to both increased longevity and reduced time spent in poor health during late adulthood.

Social and Emotional Development in Late Adulthood (Age 60 and Beyond)

16

FIGURE 16.1 While later adulthood brings about social and emotional adjustments, many of those changes are positive, often resulting in more free time and more positive emotions. (credit: modification of work "Sunset Meditation" by Sheila Sund/Flickr, CC BY 2.0)

CHAPTER OUTLINE

16.1 The Meaning of Aging in Late Adulthood
16.2 Contexts: Family, Friendships, Romantic Relationships, and Social Communities in Late Adulthood
16.3 Retirement in Late Adulthood
16.4 Living Environments and Aging in Late Adulthood
16.5 Successful Social and Emotional Aging in Late Adulthood

WHAT DOES PSYCHOLOGY SAY? LeShaun is sixty-two years old and considering retiring from her nursing career. Although not having to deal with the stress of her job seems appealing, she's a bit unsure about what she'll do with that free time. While she plans to spend some of it with her adult children and the neighbors in her apartment complex, she also feels she'll miss her relationships with her work friends. Her spouse passed away very unexpectedly ten years ago, and her work relationships have been a fulfilling, daily source of social interactions. She also has a stable network of friends outside of her job, but she worries about feeling lonely without that daily contact with colleagues.

LeShaun considers taking on some new activities to fill her time and give her a sense of purpose. She's heard about medical volunteer opportunities abroad and is intrigued by the prospect of going someplace she's never been, like Cambodia or Peru. She has always wanted to travel, and being able to use her medical training to help others in the process would be an added bonus. However, several decades of living with the autoimmune disease lupus have taken a toll on her bones and joints, making her apprehensive about being away from her

primary doctor. Understandably, she has several questions about this next phase in life:

- What will her social and emotional life be like throughout her later years?
- What will her most meaningful relationships and activities look like?
- What are some of the challenges, obstacles, and opportunities she might face?

Fortunately for LeShaun, research suggests her life can continue to be happy and fulfilling in late adulthood.

16.1 The Meaning of Aging in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe the social and cultural aspects of aging
- Discuss aging stereotypes
- Explain Erikson's integrity versus despair challenge
- Describe self and socioemotional development in late adulthood

Reina is eighty-five years old. When her children ask what she's been up to recently, she gives them a lengthy report of her activities, which include making 10 pints of guava jam, tutoring her new neighbor in Spanish, buying Three Kings Day gifts for her grandchildren, having lunch with friends, attending mass, and rooting for her favorite soccer team, Club América (who are apparently not playing up to Reina's standards).

Research shows that older adults tend to be happier than people in younger age groups, and many maintain their independence for most of their later years. This section focuses on different perspectives on older age, including stereotypes and discrimination. It also covers how our sense of self changes later in life and emotional shifts that typically occur as we get older.

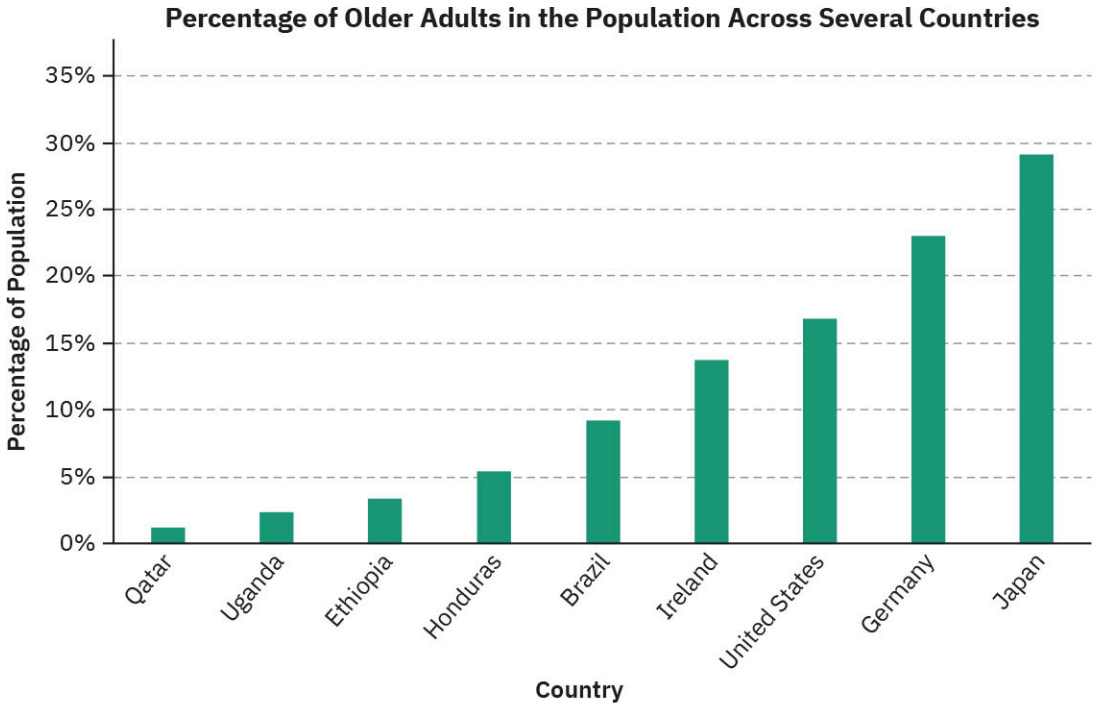
Perspectives on Aging

Older adults typically have a different outlook on life than younger individuals. Their knowledge of their mortality and the realization that time is more limited can drive several changes related to reaching health and fitness goals, nurturing relationships, and maintaining a positive emotional state (Keldal & Şeker, 2021; Strout et al., 2018).

Different cultures also have varied perspectives on age (Figure 16.2). Historically, cultures in eastern Asia were described as having more positive views of aging and viewing aging as a symbol of higher status, due to cultural principles that valued wisdom, collectivism, and family (Gire, 2019; Kornadt et al., 2022). However, more recent research suggests cultural differences are more complex than initially thought. In one study, members of Eastern cultures report seeing older adults as more competent than younger adults but also having more negative feelings toward them and a higher likelihood of avoiding contact (Vauclair et al., 2016).

FIGURE 16.2 The way different cultures view older adults may depend on cultural values as well as economic conditions. (credit: modification of work "Senior citizen" by Aan Kasman/Flickr, CC BY 2.0)

This more nuanced view was supported by a large-scale study of participants from twenty-six Asian and Western countries. The participants tended to have similar views of aging and consistently associated aging with greater wisdom, knowledge, and respect from others, but also with decreased physical ability, attractiveness, and ability to learn new things. However, views of aging were predicted not by culture but by the percentage of older adults in the population, and higher percentages correlated with more negative views (Löckenhoff et al., 2009; Wettstein et al., 2024)[1] (Figure 16.3). Many of these countries also had low socioeconomic status (SES); thus, a potential explanation is that older adults are viewed as competitors for limited resources (Gire, 2019; Kornadt et al., 2022).



Source: Population Reference Bureau. (2020). Countries with the oldest populations in the world.

FIGURE 16.3 The percentage of adults over age sixty-five years in the population varies drastically across countries,

1 This study (Lockenhoff et al., 2009) uses the terms "Asian" and "Western." This study (Wettstein et al., 2024) used German research participants.

representing less than 5 percent in some and more than 20 percent in others. Countries with higher percentages of older adults in the population tend to have more negative cultural views about aging. (data source: Population Reference Bureau; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Ageism and Stereotypes about Late Adulthood

Stereotypes and misconceptions about the aging process and older people are common, particularly when it is a stage of life we have not experienced ourselves. These views can be positive, such as associating older people with wisdom (Gire, 2019), but most tend to be negative, characterizing older adults as cognitively impaired, grumpy, depressed, isolated, in poor health, and unable to care for themselves (Hummert et al., 1994; Reissmann et al., 2021). Scientific research contradicts many of these biases.

A larger concern occurs when stereotypes translate to discrimination, which is called **ageism** when it is against someone solely due to their age. It is illegal in the workplace in the United States (under the Age Discrimination in Employment Act of 1967), yet research suggests it is still common, especially in the hiring process. Older applicants find it more difficult to gain employment despite their experience and qualifications (Dennis & Thomas, 2007; Neumark, 2020). Common stereotypes are that older workers underperform, resist change, are unable to learn new skills, and are distracted by family and health issues (Ilişanu & Andrei, 2018).

Older women are more likely to experience workplace ageism than older men (Walker & Zelin, 2021). This "gendered ageism" may be particularly true for certain positions or career fields, such as technology (Corbett, 2019), management positions, and physically demanding occupations (McGann et al., 2016). The combination of sexism and ageism in the workplace may lead to lower pay and a lack of promotion opportunities, producing gender differences in financial stability after retirement (Rochon et al., 2021).

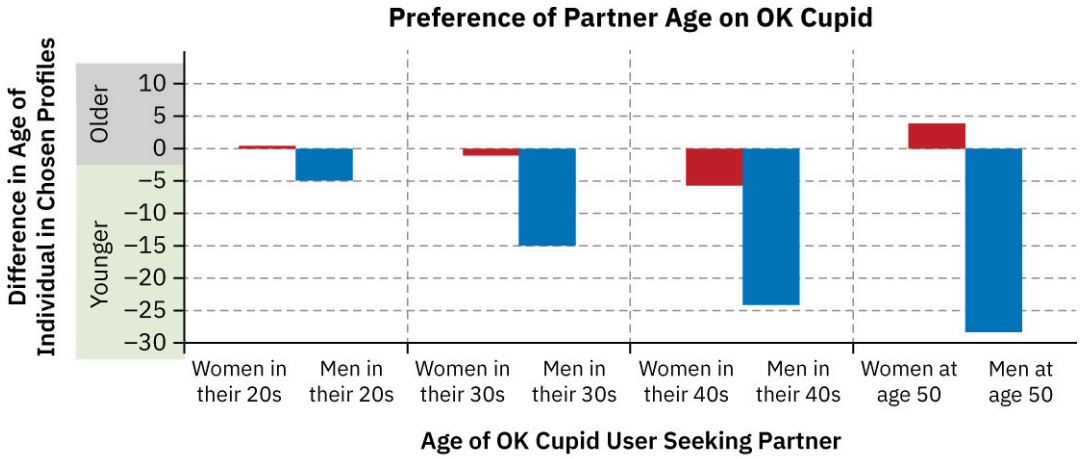
LINK TO LEARNING

Learn more about why ageism is considered one of the last socially acceptable stereotypes (https://openstax.org/r/104ageism) and some of the harm this bias can produce.

LINK TO LEARNING

Ageism is often a hidden bias held toward people how are older. Watch this video on how we can all help reduce age bias in ourselves and in the world around us (https://openstax.org/r/104ReduceAgeism) to learn more.

The intersection of ageism and sexism also illuminates double standards in the wider culture. Popular entertainment, for instance, often pairs older men actors with much younger women. Data from the dating website OkCupid suggest that younger users, regardless of gender, want to find partners similar in age (Engel, 2014; Kenrick, 2018; Rudder, 2014). However, men users in their fifties tended to click on potential partners twenty-five years younger (Figure 16.4). Marriage data are consistent with this trend. Women marry similarly aged partners across the lifespan, but as men get older, the age gap between them and women widens (England & McClintock, 2009).



Sources: Engel, P. (2014). Guys like women in their early 20s regardless of how old they get. Business Insider. Rudder, C. (2014). Dataclysm: Who we are (when we think no one's looking). Crown.

FIGURE 16.4 Women using OkCupid expressed interest in similarly aged partners, while men looked for relatively younger partners as they got older. (data source: Rudder, *Dataclysm: Who we are (when we think no one's looking)*; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

While older men and older women are both underrepresented in the media, older men actors are more likely to play higher-status roles, such as successful businesspeople. Some older actors, such as Harrison Ford (who is over eighty years old) and Samuel L. Jackson (in his seventies), continue to get lead roles in action movies. Media portrayals of older women, on the other hand, constitute only about 25 percent of characters over age fifty years and tend to either make the actresses look younger or reinforce negative aging stereotypes, such as their being cognitively impaired (Geena Davis Institute on Gender in Media, 2020). Recent efforts have been more inclusive. For example, the Netflix show *Grace and Frankie* depicts the friendship of two older adult women.

Psychosocial Theory of Development: Integrity versus Despair

Cultural attitudes affect some views of late life, but other views may be more internally determined. The final stage in Erikson's theory depicts the struggle with what he called **integrity versus despair** (Erikson & Erikson, 1998). In this stage, when older adults realize they're nearing the end of their life, they undertake life reviews. A **life review** is someone's reflection on and evaluation of the life they have lived, including their accomplishments, relationships, and decisions, and the way past events have contributed to their life's meaning. According to Erikson, during this process, some individuals will experience despair, including regret over bad decisions or missed opportunities, while others achieve integrity by accepting their life in its entirety and with a positive outlook.

Stage theories have been criticized for oversimplifying the continuous nature of human development (Pelaez et al., 2008), and psychoanalytic theories have been critiqued for using unscientific approaches (Skinner, 1956). While these criticisms apply to Erikson's theory, data-driven research has found support for Erikson's theory and its many components (Staudinger, 2001; Villar et al., 2021). For example, life reviews are being used therapeutically, especially in locations such as long-term care facilities that house older adults (Haber, 2006; Zhong et al., 2023). Research has found that for nursing home residents, engaging in a life review is associated with positive outcomes such as increasing aspects of integrity, decreasing aspects of despair, and improving quality of life (Haight et al., 2000; Zhong et al., 2023).

Erikson's work has also influenced other developmental scholars. For example, Robert Peck expanded the integrity versus despair stage to include three additional tasks:

- *Differentiation* is the process of adjusting your identity after retiring and finding meaning separate from work, such as by pursuing hobbies or volunteering.

- *Body transcendence* is the act of coming to terms with the typical declines in physical ability and health. This includes finding value and meaning in areas of life that are not primarily dependent on physical abilities, such as engaging more in puzzles or games that are not physically difficult to perform.
- *Ego transcendence* is the process of acknowledging and accepting that death is approaching. It includes reflecting on life and recognizing its meaning and value (Peck, 1956). This aspect of Peck's theory is most consistent with Erikson's idea of a life review.

Other research has explored the notion of a stage of development after integrity versus despair. Some of this research was based on the work of Joan Erikson, Erik Erikson's spouse, who proposed that challenges faced after age eighty years required additional adjustment (Brown & Lowis, 2003; Erikson & Erikson, 1998). Tornstam (2011) referred to this stage as gerotranscendence, in which people in their eighties and nineties look beyond their own experience, consider their connections to earlier generations, and accept change as inevitable and natural. Evidence for gerotranscendence has been found in studies of Iranian, Japanese, Ethiopian, and British older adults, although it may be affected by cultural views of spirituality and individual characteristics such as tolerance for ambiguity (Brown & Lowis, 2003; Kida et al., 2024; Mekonnen et al., 2023; Raeesi Dehkordi et al., 2020).

Self and Social Development

People often interpret the word "self" as focusing on the individual, but the self is a very social topic, because people define and evaluate themselves relative to others (Adame, 2022; Sedikides et al., 2011). By comparing your characteristics and abilities to other people, you develop clear ideas about who you are and how you differ from others.

Some research focusing on the self in later life has examined how older adults define themselves. These definitions often include psychological and cognitive characteristics, interpersonal relationships, social roles, appearance, physical functioning, and attitudes (Freund & Smith, 1999; Lu, 2017; Pontinen et al., 2019). These domains may not be equally emphasized, however. Concerns about health and physical functioning often figure prominently (Pontinen et al., 2019), and a study of Israeli older adults noted a tendency to downplay aging and emphasize being active and young (Okun & Ayalon, 2023).

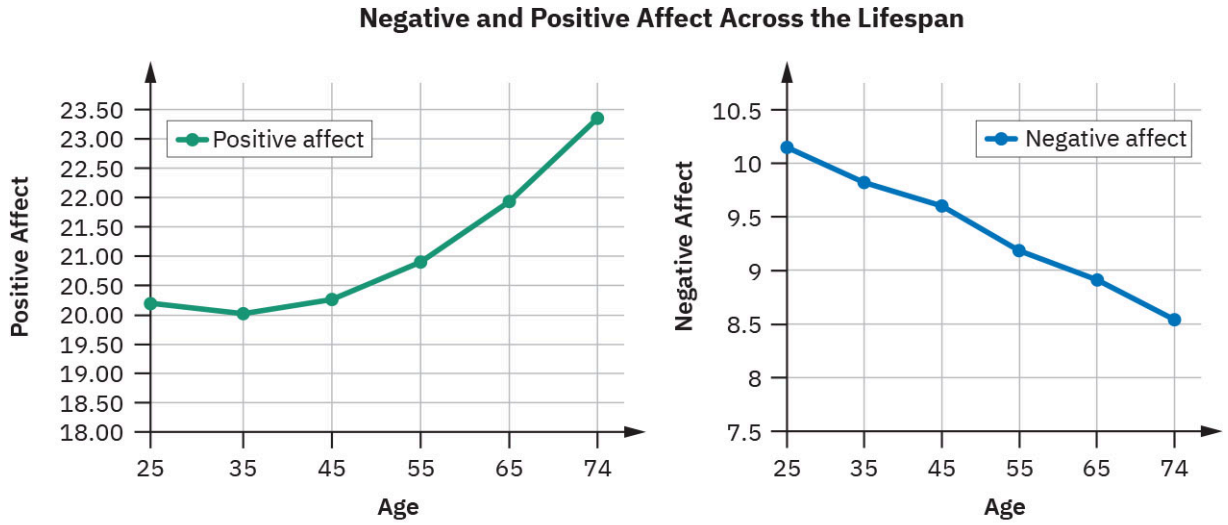
Older adults' sense of self often includes both positive and negative views of their own aging, their changing appearance, their sense of aging well, their meaning in life, and their future hopes and fears (Hausknecht et al., 2020; Okun & Ayalon, 2023; Pontinen et al., 2019). Many older adults continue to define themselves in terms of their professional occupation despite likely being retired, and concerns about body image rank low on the list, suggesting that older adults are less preoccupied with their appearance and more connected to their younger and middle-aged identities than perhaps previously assumed. Two aspects of self—personality and emotions—are important parts of development at this life stage.

Personality in Late Adulthood

Research related to the Big Five traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism) suggests they become very stable after age thirty years (Costa & McCrae, 1994), and this pattern has been found cross-culturally (Fung, 2013). Nonetheless, minor changes may occur (Allemand et al., 2008). Extraversion and conscientiousness slightly decline across adulthood, particularly after age sixty years, suggesting that retirement could reduce opportunities for social interaction and the need for the organized, careful behavior indicative of conscientiousness (Graham et al., 2020). Extraversion and conscientiousness are positively correlated with greater life satisfaction and better mental health in late adulthood, perhaps because they contribute to more and higher-quality relationships (Kida et al., 2024). Neuroticism decreases for most of adulthood but increases in later years, possibly due to anxiety about health problems and thoughts of mortality. Openness to new experiences appears to be stable across adulthood before decreasing in later life. Agreeableness did not demonstrate any change (Graham et al., 2020); this is worth noting because decreased agreeableness could indicate depression, cognitive decline, or other health problems.

Emotional Changes

One way to consider older adults' emotional state is to examine research studying **positive affect** and **negative affect**. Positive affect is the extent to which someone experiences positive emotions such as happiness. Negative affect is the degree to which people feel negative emotions such as sadness or anger. Research suggests that as people age, they report experiencing more positive affect and less negative affect (Carstensen & DeLiema, 2018; Erbey et al., 2020; Mroczek & Kolarz, 1998) (Figure 16.5). This is thought to be one of the reasons depression decreases in older age.



Source: Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology, 75*(5), 1333–1349.

FIGURE 16.5 Positive affect increases throughout most of adulthood and older age, while there is a corresponding decline in negative affect. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The ability to control or regulate emotions can follow two paths when people age. One is to be as emotionally positive as possible, which may reflect acceptance of inevitable life changes and potential benefits of aging, such as wisdom, and is consistent with the themes of integrity and gerotranscendence (Kida et al., 2024; Mekonnen et al., 2023; Raeesi Dehkordi et al., 2020). Older adults tend to choose activities that result in positive emotional responses. For example, they avoid potentially distressing situations and seek out entertainment with more uplifting, optimistic themes (Bartsch, 2012; Erbey et al., 2020).

The other path lets us use our cognitive abilities to better understand our negative emotions and maintain objectivity when in a negative emotional state. Gisela Labouvie-Vief, for example, proposed a dynamic integration theory suggesting that emotion and cognition tend to increasingly merge throughout adulthood. At young ages, emotional responses tend to be simpler and more automatic, but they become increasingly complex with age because cognition and emotion are better integrated. Thus, people develop more tolerance for positive and negative emotional states and appreciate the complexity of their emotional responses (Labouvie-Vief, 2003; Labouvie-Vief et al., 2007). For example, say an older adult is in a negative emotional state after being diagnosed with a serious medical condition. They regulate this response and maintain objectivity by considering how they could improve their situation with medication and/or lifestyle changes. They may also consider people in poorer health than they are, allowing them to feel grateful for their current health. Thus, they use cognitive skills to better understand and tolerate negative emotions. This ability to consolidate cognition and emotion tends to decline with decreasing fluid intelligence in later years (Labouvie-Vief, 2015).

References

Adame, A. L. (2022). Self-in-relation: Martin Buber and D. W. Winnicott in dialogue. *The Humanistic Psychologist, 50*(3), 376–388. https://doi.org/10.1037/

hum0000203
Allemand, M., Zimprich, D., & Hendriks, A. A. J. (2008). Age differences in five personality domains across the life span. *Developmental Psychology*, *44*(3), 758–770. https://doi.org/10.1037/0012-1649.44.3.758
Bartsch, A. (2012). As time goes by: What changes and what remains the same in entertainment experience over the life span? *Journal of Communication*, *62*(4), 588–608. https://doi.org/10.1111/j.1460-2466.2012.01657.x
Brown, C., & Lowis, M. J. (2003). Psychosocial development in the elderly: An investigation into Erikson's ninth stage. *Journal of Aging Studies, 17*(4), 415–426. https://doi.org/10.1016/S0890-4065(03)00061-6
Carstensen, L. L., & DeLiema, M. (2018). The positivity effect: A negativity bias in youth fades with age. *Current Opinion in Behavioral Sciences, 19*, 7–12. https://doi.org/10.1016/j.cobeha.2017.07.009
Corbett, C. M. (2019). A young man's game: Age and gender in technology jobs. In M. Choroszewicz & T. L. Adams (Eds.), *Gender, age and inequality in the professions: Exploring the disordering, disruptive and chaotic properties of communication* (pp. 213–243). Routledge. https://doi.org/10.4324/9781351052467
Costa, P. T., & McCrae, R. R. (1994). Set like plaster? Evidence for the stability of adult personality. In T. F. Heatherton & J. L Weinberger (Eds.), *Can personality change?* (pp. 21–40). American Psychological Association. https://doi.org/10.1037/10143-002
Dehkordi, F. R., Eslami, A. A., Zamani Alavijeh, F., & Matlabi, H. (2020). Gerotranscendence and active aging: The lived experience. *Journal of Religion, Spirituality & Aging, 33*(3), 271–297. https://doi.org/10.1080/15528030.2020.1770662
Dennis, H. M., & Thomas, K. A. (2007). Ageism in the workplace. *Generations*, *31*(1), 84–89. https://dspace2.creighton.edu/xmlui/handle/10504/58002
Engel, P. (2014, October 20). CHARTS: Guys like women in their early 20s regardless of how old they get. *Business Insider*. https://www.businessinsider.com/dataclysm-shows-men-are-attracted-to-women-in-their-20s-2014-10
England, P., & McClintock, E. A. (2009). The gendered double standard of aging in US marriage markets. *Population and Development Review*, *35*(4), 797–816. https://doi.org/10.1111/j.1728-4457.2009.00309.x
Erbey, M., Roebbig, J., Babayan, A., Kumral, D., Reinelt, J., Reiter, A. M. F., Schaare, L., Uhlig, M., Nierhaus, T., Van der Meer, E., Gaebler, M., & Villringer, A. (2020). Positivity in younger and in older age: Associations with future time perspective and socioemotional functioning. *Frontiers in Psychology, 11*, 567133. https://doi.org/10.3389/fpsyg.2020.567133
Erikson, E. H., & Erikson, J. M. (1998). *The life cycle completed (extended version)*. W. W. Norton & Company.
Freund, A. M., & Smith, J. (1999). Content and function of the self-definition in old and very old age. *The Journals of Gerontology Series B*, *54B*(1), 55–67. https://doi.org/10.1093/geronb/54b.1.p55
Fung, H. H. (2013). Aging in culture. *The Gerontologist*, *53*(3), 369–377. https://doi.org/10.1093/geront/gnt024
Geena Davis Institute on Gender in Media. (2020). *Frail, frumpy and forgotten: A report on the movie roles of women of age*. https://geenadavisinstitute.org/wp-content/uploads/2024/01/frail-frumpy-and-forgotten-report.pdf
Gire, J. T. (2019). Cultural variations in perceptions of aging. In K. D. Keith (Ed.), *Cross-cultural psychology: Contemporary themes and perspectives* (pp. 110–129). John Wiley & Sons.
Graham, E. K., Weston, S. J., Gerstorf, D., Yoneda, T., Booth, T., Beam, C. R., Petkus, A. J., Drewelies, J., Hall, A. N., Bastarache, E. D., Estabrook, R., Katz, M. J., Turiano, N. A., Lindenberger, U., Smith, J., Wagner, G. G., Pedersen, N. L., Allemand, M., Spiro, A., III, . . . Mroczek, D. K. (2020). Trajectories of big five personality traits: A coordinated analysis of 16 longitudinal samples. *European Journal of Personality*, *34*(3), 301–321. https://doi.org/10.1002/per.2259
Haber, D. (2006). Life review: Implementation, theory, research, and therapy. *International Journal of Aging and Human Development*, *63*(2), 153–171. https://doi.org/10.2190/da9g-rhk5-n9jp-t6cc
Haight, B. K., Michel, Y., & Hendrix, S. (2000). The extended effects of the life review in nursing home residents. *International Journal of Aging and Human Development*, *50*(2), 151–168. https://doi.org/10.2190/qu66-e8uv-nymr-y99e
Hausknecht, S., Low, L.-F., O'Loughlin, K., McNab, J., & Clemson, L. (2020). Older adults' self-perceptions of aging and 6being older: A scoping review. *The Gerontologist*, *60*(7), e524–e534. https://doi.org/10.1093/geront/gnz153
Hummert, M. L., Garstka, T. A., Shaner, J. L., & Strahm, S. (1994). Stereotypes of the elderly held by young, middle-aged, and elderly adults. *Journal of Gerontology*, *49*(5), 240–249. https://doi.org/10.1093/geronj/49.5.p240
Ilişanu, G., & Andrei, V. (2018). Age stereotypes and ageism at the workplace – #ageisjustanumber. *Journal of Comparative Research in Anthropology and Sociology*, *9*(2), 23–33. https://doaj.org/article/73b4ce9266694d64be7193103bd6f20e
Keldal, G., & Şeker, G. (2021). Marriage or career? Young adults' priorities in their life plans. *American Journal of Family Therapy*, *50*(5), 459–474. https://doi.org/10.1080/01926187.2021.1915213
Kenrick, D. T. (2018, February 13). Why are older hollywood actors paired with such young women? *Psychology Today*. https://www.psychologytoday.com/us/blog/sex-murder-and-the-meaning-life/201802/why-are-older-hollywood-actors-paired-such-young-women
Kida, H., Niimura, H., Eguchi, Y., Suzuki, K., Shikimoto, R., Bun, S., Takayama, M., & Mimura, M. (2024). Relationship between life satisfaction and psychological characteristics among community-dwelling oldest-old: Focusing on Erikson's developmental stages and the big five personality traits. *American Journal of Geriatric Psychiatry, 32*(6), 724–735. https://doi.org/10.1016/j.jagp.2023.12.018
Kornadt, A. E., de Paula Couto, C., & Rothermund, K. (2022). Views on aging—Current trends and future directions for cross-cultural research. *Online Readings in Psychology and Culture, 6*(2), 5. https://doi.org/10.9707/2307-0919.1176
Labouvie-Vief, G. (2003). Dynamic integration: Affect, cognition, and the self in adulthood. *Current Directions in Psychological Science*, *12*(6), 201–206. https://doi.org/10.1046/j.0963-7214.2003.01262.x
Labouvie-Vief, G. (2015). *Integrating emotions and cognition throughout the lifespan*. In Springer Link. https://doi.org/10.1007/978-3-319-09822-7
Labouvie-Vief, G., Diehl, M., Jain, E., & Zhang, F. (2007). Six-year change in affect optimization and affect complexity across the adult life span: A further examination. *Psychology and Aging*, *22*(4), 738–751. https://doi.org/10.1037/0882-7974.22.4.738
Löckenhoff, C. E., De Fruyt, F., Terracciano, A., McCrae, R. R., De Bolle, M., Costa, P. T., Jr., Aguilar-Vafaie, M. E., Ahn, C.-k., Ahn, H.-n., Alcalay, L., Allik, J., Avdeyeva, T. V., Barbaranelli, C., Benet-Martínez, V., Blatný, M., Bratko, D., Cain, T. R., Crawford, J. T., Lima, M. P., . . . Yik, M. (2009). Perceptions of aging across 26 cultures and their culture-level associates. *Psychology and Aging*, *24*(4), 941–954. https://doi.org/10.1037/a0016901
Lu, L. (2017). Creating well-being among older people: An Eastern perspective. In C. L. Cooper & J. C. Quick (Eds.), *The handbook of stress and health: A guide to research and practice* (1st ed., pp. 388–399). John Wiley & Sons. https://doi.org/10.1002/9781118993811.ch23
McGann, M., Ong, R., Bowman, D., Duncan, A., Kimberley, H., & Biggs, S. (2016). Gendered ageism in Australia: Changing perceptions of age discrimination among older men and women. *Economic Papers: A Journal of Applied Economics and Policy, 35*(4), 375–388. https://doi.org/10.1111/1759-3441.12155
Mekonnen, H. S., Lindgren, H., Geda, B., Azale, T., & Erlandsson, K. (2023). Being an elderly person living in metropolitan cities of northwestern Ethiopia: A descriptive phenomenological study. *Clinical Interventions in Aging, 18*, 205–218. https://doi.org/10.2147/CIA.S389305
Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology, 75*(5), 1333–1349. https://doi.org/10.1037/0022-3514.75.5.1333
Neumark, D. (2020). *Age discrimination in hiring: Evidence from age-blind vs. non-age-blind hiring procedures*. National Bureau of Economic Research. https://doi.org/10.3386/w26623
Okun, S., & Ayalon, L. (2023). The paradox of subjective age: Age(ing) in the self-presentation of older adults. *International Psychogeriatrics, 35*(10), 566–575. https://doi.org/10.1017/S1041610222000667
Peck, R. N. (1956). Psychological developments in the second half of life. In J. E. Anderson (Ed.), *Psychological aspects of aging* (pp. 42–53). American Psychological Association. https://doi.org/10.1037/10032-005
Pelaez, M., Gewirtz, J. L., & Wong, S. E. (2008). A critique of stage theories of human development: A pragmatic approach in social work. In B. A. Thyer, K. M. Sowers, & C. N. Dulmus (Eds.), *Comprehensive handbook of social work and social welfare, vol. 2: Human behavior in the social environment* (pp. 503–518). John Wiley & Sons.
Pontinen, H. M., Medvene, L. J., & Gerstenkorn, J. (2019). Possible selves of older adults entering a life plan community. *Educational Gerontology, 45*(3), 201–213. https://doi.org/10.1080/03601277.2019.1601400
Population Reference Bureau. (2020). *Countries with the oldest populations in the world*. https://www.prb.org/resources/countries-with-the-oldest-populations-in-the-world/
Reissmann, M., Geithner, L., Storms, A., & Woopen, C. (2021). Stereotypes about very old people and perceived societal appreciation in very old age. *Zeitschrift für Gerontologie und Geriatrie*, *54*(S2), 93–100. https://doi.org/10.1007/s00391-021-01971-y
Rochon, P. A., Kalia, S., & Higgs, P. (2021). Gendered ageism: Addressing discrimination based on age and sex. *The Lancet*, *398*(10301), 648–649. https://doi.org/10.1016/s0140-6736(21)01636-6
Rudder, C. (2014). *Dataclysm: Love, sex, race, and identity—What our online lives tell us about our offline selves*. Crown.
Sedikides, C., Gaertner, L., & O'Mara, E. M. (2011). Individual self, relational self, collective self: Hierarchical ordering of the tripartite self. *Psychological Studies, 56*, 98–107. https://doi.org/10.1007/s12646-011-0059-0
Skinner, B. F. (1956). Critique of psychoanalytic concepts and theories. In H. Feigl & M.
Scriven (Eds.), *Foundations of science and the concepts of psychology and psychoanalysis, 1*, 77–-87. Minnesota Studies in the Philosophy of Science. University of Minnesota Press. https://conservancy.umn.edu/items/1357be58-517f-4258-b539-379100624bcf
Staudinger, U. M. (2001). Life reflection: A social-cognitive analysis of life review. *Review of General Psychology*, *5*(2), 148–160. https://doi.org/10.1037/1089-2680.5.2.148

Strout, K., Ahmed, F., Sporer, K., Howard, E. P., Sassatelli, E., & Mcfadden, K. (2018). What are older adults wellness priorities? A qualitative analysis of priorities within multiple domains of wellness. *Healthy Aging Research, 7*(2), e21. https://doi.org/10.1097/hxr.0000000000000021
Tornstam, L. (2011). Maturing into gerotranscendence. *Journal of Transpersonal Psychology, 43*(2), 166–180. https://psycnet.apa.org/record/2014-01047-007
Vauclair, C.-M., Hanke, K., Huang, L.-L., & Abrams, D. (2016). Are Asian cultures really less ageist than Western ones? It depends on the questions asked. *International Journal of Psychology*, *52*(2), 136–144. https://doi.org/10.1002/ijop.12292
Villar, F., Serrat, R., & Pratt, M. W. (2021). Older age as a time to contribute: A scoping review of generativity in later life. *Ageing & Society*, *43*(8), 1860–1881. https://doi.org/10.1017/s0144686x21001379
Walker, R. V., & Zelin, A. I. (2021). "You're too young/old for this": The intersection of ageism and sexism in the workplace. In E. Cole & L. Hollis-Sawyer (Eds.), *Older women who work: Resilience, choice, and change* (pp. 161–187). *American Psychological Association eBooks*. https://doi.org/10.1037/0000212-010
Wettstein, M., Park, R., Kornadt, A. E., Wurm, S., Ram, N., & Gerstorf, D. (2024). Postponing old age: Evidence for historical change toward a later perceived onset of old age. *Psychology and Aging*, *39*(5), 526–541. APA PsycNet. https://doi.org/10.1037/pag0000812
Zhong, Q., Chen, C., & Chen, S. (2023). Effectiveness on quality of life and life satisfaction for older adults: A systematic review and meta-analysis of life review and reminiscence therapy across settings. *Behavioral Sciences*, *13*(10), 830. https://doi.org/10.3390/bs13100830

16.2 Contexts: Family, Friendships, Romantic Relationships, and Social Communities in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe evolving family and friend relationships in late adulthood and theories that explain them
- Describe romantic relationships in late adulthood
- Identify types and sources of social support in late adulthood

Jay is seventy-four years old and lost his long-term partner a few years ago. At first his grief was overwhelming, and he felt completely lost and alone. But slowly, with support from friends and family, Jay began to heal. He honored his partner's memory by carrying on their traditions (such as volunteering at the animal shelter and hosting an annual Diwali dinner for neighbors) and found solace in knowing that he and his partner had been blessed with many happy years together. Jay still misses his partner deeply, but the grief no longer threatens to cut him off from a meaningful life.

Think of your current relationships, including friends, family, and others who support you in your goals. Now consider what your social life might look like when you are older. Do you think you'll have the same types of relationships then as now? Will these relationships serve similar roles? How might marriage and other romantic relationships change? In this section, you'll explore questions like these and learn more about how community resources for helping older adults meet their social and practical needs, and how available and accessible those types of resources are?

Social Changes in Later Life

A **social network** encompasses everyone with whom you're socially engaged (Ayalon & Levkovich, 2019) (Figure 16.6). It is usually complex and consists of family, friends, romantic partners, coworkers, competitors, and acquaintances. It also includes professionals such as teachers and doctors who interact with us in the course of their jobs (Portz et al., 2020).

FIGURE 16.6 Social networks include many different types of relationships. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Social networks change over time due to a phenomenon called a **social convoy** (Antonucci et al., 2019; Kahn & Antonucci, 1980). That is, throughout life, people gain new relationships and end old ones. As an analogy, consider a convoy of truckers traveling cross-country. They may support each other by helping shift lanes, learning faster routes, and sharing information about good places to eat. As this convoy travels, some members may drop out and others may join, and some stay for the entire trip. Social convoys are similar. Overall, however, the size of a social network steadily decreases from early to later adulthood (Wrzus et al., 2013), and in later years, it's substantially smaller than it was before.

Several theories have attempted to explain how and why social networks change as people age. One of the earliest, **disengagement theory**, states that as people progress through later life, it's normal and natural to become increasingly isolated and removed from relationships as they approach death (Cumming & Henry, 1961). This theory is very controversial, mostly because it seems counterintuitive to claim that becoming isolated in late life is a natural, healthy process, when individuals may need more assistance and support to adapt to age-related declines.

In contrast to disengagement theory, **activity theory** suggests that more social engagement is associated with positive outcomes in older age (Tobin & Neugarten, 1961). In general, research supports activity theory more than disengagement theory in that social engagement is viewed as desirable and associated with better mental health and life satisfaction (Kida et al., 2024; Lu, 2017; Mekonnen et al., 2023; Okun & Ayalon, 2023; Pontinen et al., 2019). However, these opposing theories might both be supported under different circumstances. Some research suggests activity theory may be more applicable to older adults living in places with many options for activities, such as cities with older adult community centers, public transportation, and artistic events, rather than to older adults living in rural settings with fewer recreational and social options. Activity theory may also

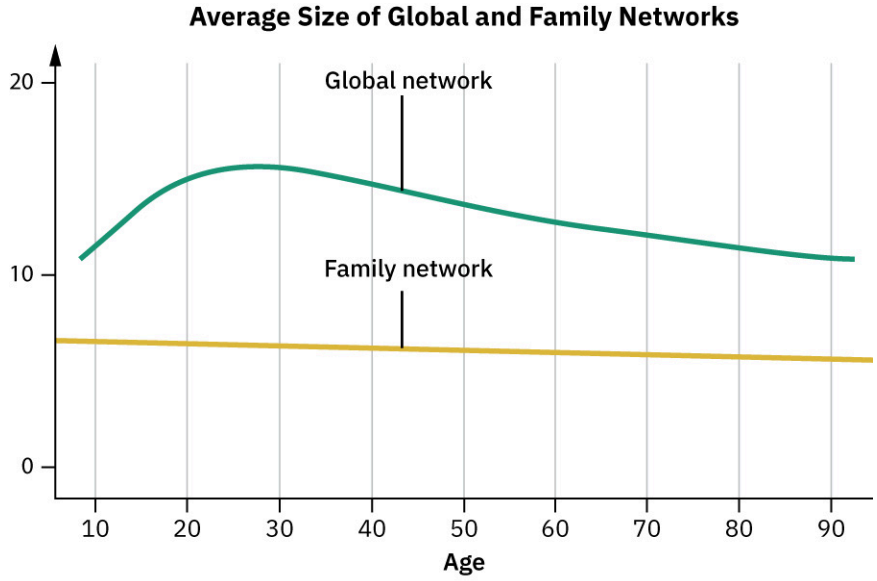
be more relevant in countries with a high SES, whose people often have longer life expectancy, and there is a general cultural emphasis on living longer and maintaining good health (Asiamah, 2017).

Another hypothesis, Laura Carstensen's (1992) **socioemotional selectivity theory**, suggests that in young and middle adulthood, people's social goals are largely information seeking—that is, getting an education and learning how to be successful in a career. However, as people age, they instead prioritize emotional goals aimed at enjoying life and having positive, meaningful interactions (Carstensen et al., 1999). This is relevant to the issue of social networks because a larger social network may be better for achieving informational goals, given that it provides a large and diverse group of people upon whom you can call. Emotional goals, on the other hand, seem to be better supported by a smaller number of close, meaningful relationships. Data supporting this theory suggest that older adults don't become socially disengaged but just more selective in their relationships as they choose to nurture the more meaningful ones (Carstensen et al., 1999; Dehkordi et al., 2020).

However, some research indicates that in more Western cultures, increasing age is associated with a stable number of emotionally close relationships but a decline in the number of less important, peripheral relationships, while in Eastern cultures, the number of emotionally close relationships increases with age, and there's a smaller decrease in the number of peripheral relationships (Fung, 2013).

Types of Relationships

Family relationships tend to be highly meaningful across the lifespan. While overall or "global" social networks grow smaller across adulthood, family social networks remain stable in size from adolescence throughout older age (Wrzus et al., 2013) (Figure 16.7). Consistent with socioemotional selectivity theory, it appears that the shrinking of social networks in later years is largely due to having fewer distant friends and acquaintances and the decrease in network size is less the result of changes in family relationships. People may maintain family relationships because they are more likely to fulfill emotional goals, while distant friends and acquaintances mainly serve informational goals. Thus, family relationships may play a relatively larger role in older adults' lives than in those of younger age groups.



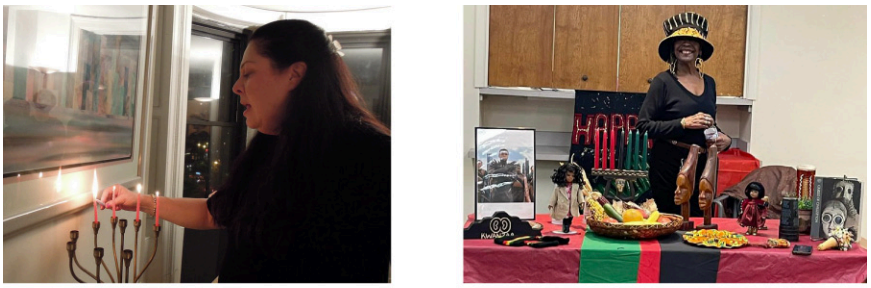
Source: Wrzus, C., et al. (2013). Social network changes and life events across the life span: a meta-analysis. *Psychological Bulletin, 139*(1).

FIGURE 16.7 The average global network decreases in size over the course of adulthood, while family networks remain stable in size. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

While family networks may remain stable, the roles people play in them shift. The role of grandparent typically

begins in middle adulthood (AARP, 2018) and extends well into later life. Grandparents tend to report high levels of satisfaction and fulfillment from interacting with their grandchildren and lower levels when such contact is limited (Kaganas & Piper 2020; Peterson, 1999). However, not having grandchildren doesn't appear to be associated with lower life satisfaction or happiness (Di Gessa et al., 2020), suggesting that becoming a grandparent is not essential to experiencing fulfillment in later life.

Another shifting role in family relationships is that of **kinkeeper**, someone who assumes the responsibility of keeping family members connected. Does someone in your family tend to organize family events, maintain family traditions, and/or communicate family news to other members? If so, that person could be considered your family's kinkeeper (Figure 16.8). Kinkeepers tend to be in the later part of middle adulthood or older age, most commonly between ages fifty and sixty-nine years. They're also much more likely to be women than men (Hornstra & Ivanova, 2023; Rosenthal, 1985).



(a) (b)

FIGURE 16.8 Kinkeepers often assume the role of maintaining cultural identity and traditions within the family, including celebrating holidays such as (a) Hanukkah and (b) Kwanzaa. (credit a: modification of work "Lighting the Menorah" by "slgckgc"/Flickr, CC BY 2.0; credit b: modification of work "Kawanzaa @ East Ensley" by Birmingham Public Library/Flickr, CC BY 2.0)

Some research finds cultural variations in both the role and the characteristics of kinkeepers. Kinkeepers in immigrant families tend to be the oldest family members, and they also maintain cultural traditions and connections with family from their native country. For example, one research participant, a seventy-two-year-old Filipino grandmother, made the following statement to her granddaughter:

> I think my role is to be an older generation who will try to maintain the identity of the family. I notice that my kids are busy, that at times they can't spend time with their own kids to spread Filipino identity. You guys are so Americanized. That's why I keep talking about the Philippines with you. . . . I bring the Filipino dessert called Tupig. . . . I also bring my Santo Niño [Christ] figurine. I have it out on top of the nightstand where anyone could see it, especially you and your brother. In a way, I'm trying to preserve our Catholic identity. (Treas & Mazumdar, 2004, p. 115)

Sibling relationships are also connected to both kinkeeping and family life. Several lines of research indicate that siblings play an important role in helping each other deal with declines and problems in later life. Siblings tend to decrease their amount of contact and communication in early adulthood; after that, contact remains relatively stable until around age seventy years, when siblings increase the amount of help and assistance they provide each other (White, 2001). This increase often happens when a sibling assumes the family kinkeeping role following the death of parents, although it isn't always maintained over long periods of time (Kalmijn & Leopold, 2019). Whether the connection among siblings strengthens after the death of parents may depend on what the relationship was like before. Siblings who previously had strained or contentious relationships may drift even further apart after their parents die (Greif & Wooley, 2015). However, sibling conflict also tends to decrease in older years, although there's no single cause of this effect, and it's unclear whether it's connected to the increase in assistance (Gilligan et al., 2020).

Romantic Relationships in Late Adulthood

Romantic relationships are another important part of our social lives. While not everyone forms long-term romantic relationships, they're a common part of life for many adults. However, in later years, these relationships often change due to either death or divorce. While these events can happen at any point in the relationship, they have important implications for successful aging.

Long-term romantic relationships have many benefits, including companionship, financial resources, and assistance with the tasks of daily life. Overall, marital satisfaction in older age tends to be relatively high compared to that of other age groups. However, in later life it is affected by contentment with the marriage earlier in life (Anderson et al., 2010) and the level of support the partners provide each other (Bennett, 2005; Landis et al., 2013). Research shows that support from a spouse predicts marital satisfaction in older age. Spousal support could play an important role in compensating for age-related losses, such as declining cognitive ability (Berg et al. 2011). For example, the close familiarity between long-term married partners can result in improved performance on collaborative tasks (Kimbler & Margrett, 2009).

Some research suggests that LGBTQ+ couples may fare better than heterosexual couples when it comes to partner support. In one study, gay and lesbian couples across adulthood (including older adults) reported receiving more support from their partner, which accounted for higher levels of relationship satisfaction and fewer thoughts about ending the relationship than among heterosexual couples (Ellis & Davis, 2017) (Figure 16.9). The value of support may be especially relevant for this population. Members of the current older LBGTQ+ community are more likely than younger members to have experienced discrimination and possibly rejection from their family. Despite these challenges, or maybe because of them, many older LGBTQ+ individuals fostered meaningful social connections and support networks consisting of romantic partners and "chosen" family (Allen & Lavender-Stott, 2020).

FIGURE 16.9 Older members of the LGBTQ+ community have fostered stronger social connection and support networks in response to past discrimination. (credit: "The kiss" by Ron Frazier/Flickr, CC BY 2.0)

While marriages that endure tend to be relatively satisfying, research has also considered what happens when they end. Divorce rates in the United States have steadily decreased overall in recent years (CDC, 2021), but they have been climbing among those fifty years of age and older (Brown & Lin, 2012; Raley & Sweeney, 2020). The reasons are unclear but may be related to longer life expectancy and demographic shifts resulting in more single older adults in the population. For example, a sixty-five-year-old who expects to live well into their eighties may reassess their goals, identity, and lifestyle, and thus leave a relationship they were unhappy with. Another possibility is that the baby boomers who contributed to the increase in divorce rates during the 1980s and 1990s are carrying these tendencies into older age.

LINK TO LEARNING

Follow this link to read about a woman who experienced a divorce in older age (https://openstax.org/r/104divorceold) and her subsequent journey to redefine her life, goals, and roles.

While divorce among older adults is on the rise, the most common cause for the end of a long-term relationship in later life is widowhood. Among those seventy-five years old and older, 58 percent of women and 28 percent of men have experienced widowhood (Mayol-Garcia et al., 2021). The consequences of ending long-term relationships, regardless of cause, vary by gender, at least in heterosexual couples. For example, men tend to suffer more than women emotionally, both in the short term and for several years afterward. However, women are more likely than men to experience financial hardship, particularly after a divorce (Butrica & Smith, 2012; Streeter, 2020).

This disparity is likely a result of gender inequity in pay over a lifetime, combined with a tendency for older cohorts to adhere more closely to traditional gender roles, so that men often generated the income for the family unit. Also, due to gender differences in life expectancy combined with the tendency for married men to be older than their female spouses, women may experience longer durations of widowhood and corresponding declines in their retirement accounts (Streeter, 2020). However, the percentage of widows living in poverty appears to be declining, possibly because more recent cohorts of older women achieved greater education and more participation in the workforce (Munnell et al., 2020).

Regardless of how long-term relationships end, some older adults are interested in pursuing new relationships (Figure 16.10). However, there are some important differences. Following divorce and widowhood, heterosexual older women are more likely than men to express views against remarriage, while men tend to be more eager to remarry (Crowley, 2019; Davidson, 2002). This pattern has also been shown in online dating research. Older women using dating platforms are more likely to indicate a desire for companionship but are more likely to be averse to remarriage. Older men, on the other hand, are more likely to explicitly indicate they are interested in marriage (McWilliams & Barrett, 2014).

In the past, this trend was attributed to the smaller pool of available partners for straight women due to gender differences in longevity. More recent research, however, suggests more complex contributing factors: specifically, gender roles that put the burden of daily tasks such as cooking and cleaning on women (men want someone to help them with these things), and the fact that women are more likely to be the ones who maintain social connections for the couple (Crowley, 2019; Davidson, 2002).

This tendency has also been found cross-culturally. A recent study of widowed older adults in Denmark compared Denmark natives to various immigrant populations living in Denmark. In both groups, older widowed men were more likely to remarry, although this gender difference was more pronounced among immigrant older adults (Liversage, 2021) (Figure 16.10). Specific cultural values may influence remarriage patterns; for example, the patriarchal nature of Indian culture regards remarriage as more acceptable for widowers than widows (Perkins et al., 2016), but Iranian culture views remarriage in late adulthood as immoral, regardless of gender (Osmani et al., 2017). There has been less research on remarriage rates among older gay and lesbian couples, but some data suggest that older lesbian women are nearly twice as likely to remarry after divorce or widowhood than are older gay men (Heley & Hewitt, 2022).

FIGURE 16.10 Dating in late adulthood has been increasing. (credit: "lovebirds in the park" by Paul I. Dineen/Flickr, CC BY 2.0)

Social and Community Support

The term **social support** refers to the assistance people get from others. It includes instrumental social support, which is practical or tangible help that addresses a specific problem such as needing transportation or wanting advice. Emotional social support, on the other hand, doesn't focus on helping fix a practical problem but is intended to help a person feel better, such as listening to them vent frustrations or sending funny memes (Jolly et al., 2020).

People get social support from many sources. Informal social support is assistance from friends, family, and neighbors. Formal social support comes from either paid professionals or volunteers who are affiliated with an organization, government entity, or service provider, such as home health aides, social workers, and religious institutions (Shunhua et al., 2020).

INTERSECTIONS AND CONTEXTS

The Impact of Gender, Race, and Ethnicity on Use of Social Support

Gender, race, and ethnicity may affect the extent to which individuals rely on formal and informal social support. For example, older women tend to have several informal social support sources including family and friends. Older men, on the other hand, tend to rely on their spouse for informal and emotional support (Gurung et al., 2003). This may be the reason men struggle emotionally more than women after the death of a spouse (Streeter, 2020). Older men may also resist using formal social support services (Ilinca et al., 2022), likely due to traditional gender norms that discourage men from asking for help or depending on others. Older men without a spouse are therefore at higher risk of not having their emotional or instrumental needs met due to a social support deficit. Perhaps this helps explain why older men are more eager to remarry than are older women.

Research has demonstrated that many formal support services, such as nursing homes, aren't used equally

across racial and ethnic groups. Despite data suggesting they may have greater health-care needs, Black and Hispanic older adults have historically underutilized nursing homes (Thomeer et al., 2015). However, these trends seem to vary over time.

Given this data, it's not surprising that Black, Hispanic, and Asian American families are more likely than White families to use family support to care for aging relatives and devote more time to providing this care (Cohen et al., 2019; Fabius et al., 2020; Liu et al., 2021; Pandya, 2005). Both a lack of access and cultural preferences are likely responsible for these differences. For example, some cultural factors, such as the Hispanic cultural value of *familismo* (a cultural emphasis on the importance of family), may discourage seeking formal assistance. Non-White families also tend to lack financial resources that would allow them to pay for formal services (Cohen et al., 2019; Fabius et al., 2020; Liu et al., 2021). Combined, this research suggests that Black and Hispanic older adults may be more likely to use formal social support to assist with financial hardship in older age, while White older adults may be more likely to use formal social support to deal with informal support deficits.

Many older adults are independent, though age-related declines in health, cognitive ability, and/or physical ability increase their need for support. While friends and family are obvious sources for helping us feel better emotionally, they also frequently provide instrumental support in a variety of areas such as transportation, home maintenance, and shopping (Kent et al., 2020). Instrumental support may also come from formal sources. Some sources of this help, such as health-care providers, are essential, well known, and used by all age groups. Other types, such as services that provide transportation or deliver meals to older adults, are more specific to the needs of older adults (Lu et al., 2020; Shiba et al., 2016). Still other types of formal social support, such as community centers, civic clubs, and religious organizations, provide emotional support by enabling older adults to socialize and participate in enjoyable activities (Dickson & Wills, 2022).

What does research tell us about the importance of social support? Older adults without such support, particularly emotional support, experience loneliness. In one recent study, around one-third reported sometimes dealing with loneliness, while 5 percent reported feeling lonely most of the time (Berg-Weger & Morley, 2020). A meta-analysis of studies from the United States and several European countries indicated that loneliness tends to increase in late life, particularly for people of low SES (Graham et al., 2024). Loneliness in later life has been correlated with a variety of health problems, such as heart disease, mental health problems, dementia, weight gain, substance use, and reduced physical activity (Berg-Weger & Morley, 2020), suggesting a possible bidirectional or cyclical relationship between loneliness and health.

Older adults were especially vulnerable to increases in loneliness and social isolation during the COVID-19 pandemic. Older adults have a higher likelihood of living alone and faced a greater threat from the virus than younger people. This made them more isolated, which, in turn, also contributed to reduced health and quality of life. This was especially true for those of low SES and those in institutional settings such as nursing homes. Still, research has been mixed, suggesting that many older adults coped well during this social isolation (Kasar & Karaman, 2021; Müller et al., 2021).

LINK TO LEARNING

While precautions like social distancing likely saved older adults' lives in the early days of the COVID-19 pandemic, the resulting isolation had consequences. The toll that social isolation had on many older adults (https://openstax.org/r/104isolation) is described in this news report.

References

Allen, K. R., & Lavender-Stott, E. S. (2020). The families of LGBTQ older adults: Theoretical approaches to creative family connections in the context of marginalization, social-historical change, and resilience. *Journal of Family Theory & Review, 12*(2), 200–219. https://doi.org/10.1111/jftr.12370

Anderson, J. L., Van Ryzin, M. J., & Doherty, W. J. (2010). Developmental trajectories of marital happiness in continuously married individuals: A group-based modeling approach. *Journal of Family Psychology, 24*(5), 587–596. https://doi.org/10.1037/a0020928

Antonucci, T. C., Ajrouch, K. J., & Webster, N. (2019). Convoys of social relations: Cohort similarities and differences over 25 years. *Psychology and Aging, 34*(8), 1158–1169. https://doi.org/10.1037/pag0000375

Asiamah, N. (2017). Social engagement and physical activity: Commentary on why the activity and disengagement theories of ageing may both be valid. *Cogent Medicine*, *4*(1), 1289664. https://doi.org/10.1080/2331205x.2017.1289664
Ayalon, L., & Levkovich, I. (2019). A systematic review of research on social networks of older adults. *Gerontologist*, *59*(3), e164–e176. https://doi.org/10.1093/geront/gnx218
Bennett, K. M. (2005). Psychological wellbeing in later life: 5The longitudinal effects of marriage, widowhood and marital status change. *International Journal of Geriatric Psychiatry*, *20*(3), 280–284. https://doi.org/10.1002/gps.1280
Berg, C. A., Schindler, I., Smith, T. W., Skinner, M., & Beveridge, R. M. (2011). Perceptions of the cognitive compensation and interpersonal enjoyment functions of collaboration among middle-aged and older married couples. *Psychology and Aging*, *26*(1), 167–173. https://doi.org/10.1037/a0021124
Berg-Weger, M., & Morley, J. E. (2020). Loneliness in old age: An unaddressed health problem. *The Journal of Nutrition, Health and Aging*, *24*(3), 243–245. https://doi.org/10.1007/s12603-020-1323-6
Brown, S. J., & Lin, I-F. (2012). The gray divorce revolution: Rising divorce among middle-aged and older adults, 1990–2010. *The Journals of Gerontology Series B*, *67*(6), 731–741. https://doi.org/10.1093/geronb/gbs089
Butrica, B. A., & Smith, K. E. (2012). The retirement prospects of divorced women. *Social Security Bulletin*, *72*(1), 11–22. https://pubmed.ncbi.nlm.nih.gov/22550718
Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging*, *7*(3), 331–338. https://doi.org/10.1037/0882-7974.7.3.331
Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*, *54*(3), 165–181. https://doi.org/10.1037/0003-066x.54.3.165
Centers for Disease Control and Prevention. (2021). Provisional number of marriages and marriage rate: United States, 2000–2021. https://www.cdc.gov/nchs/data/dvs/marriage-divorce/national-marriage-divorce-rates-00-21.pdf
Cohen, S. A., Sabik, N. J., Cook, S. K., Azzoli, A. B., & Mendez-Luck, C. A. (2019). Differences within differences: Gender inequalities in caregiving intensity vary by race and ethnicity in informal caregivers. *Journal of Cross-Cultural Gerontology, 34*, 245–263. https://doi.org/10.1007/s10823-019-09381-9
Crowley, J. E. (2019). "Once bitten, twice shy? Gender differences in the remarriage decision after a gray divorce." *Sociological Inquiry*, *89*(1), 150–176. https://doi.org/10.1111/soin.12253
Cumming, E., & Henry, W. E. (1961). Growing old: The process of disengagement. Basic Books.
Davidson, K. (2002). Gender differences in new partnership choices and constraints for older widows and widowers. *Ageing International*, *27*, 43–60. https://doi.org/10.1007/s12126-002-1014-0
Dehkordi, F. R., Eslami, A. A., Alavijeh, F. Z., & Matlabi, H. (2020). Gerotranscendence and active aging: The lived experience. *Journal of Religion, Spirituality & Aging, 33*(3), 271–297. https://doi.org/10.1080/15528030.2020.1770662
Di Gessa, G., Bordone, V., & Arpino, B. (2020). Becoming a grandparent and its effect on well-being: The role of order of transitions, time, and gender. *The Journals of Gerontology Series B, 75*(10), 2250–2262. https://doi.org/10.1093/geronb/gbz135
Dickinson, A., & Wills, W. (2022). Meals on wheels services and the food security of older people. *Health & Social Care in the Community*, *30*(6), e6699–e6707. https://doi.org/10.1111/hsc.14092
Ellis, L., & Davis, M. H. A. (2017). Intimate partner support: A comparison of gay, lesbian, and heterosexual relationships. *Personal Relationships*, *24*(2), 350–369. https://doi.org/10.1111/pere.12186
Fabius, C. D., Wolff, J. L., & Kasper, J. D. (2020). Race differences in characteristics and experiences of Black and white caregivers of older Americans. *The Gerontologist, 60*(7), 1244–1253. https://doi.org/10.1093/geront/gnaa042
Fabbre, V. D., & Gaveras, E. (2020). The manifestation of multilevel stigma in the lived experiences of transgender and gender nonconforming older adults. *American Journal of Orthopsychiatry*, *90*(3), 350–360. https://doi.org/10.1037/ort0000440
Fung, H. H. (2013). Aging in culture. *The Gerontologist, 53*(3), 369–377. https://doi.org/10.1093/geront/gnt024
Gilligan, M., Stocker, C. M., & Conger, K. J. (2020). Sibling relationships in adulthood: Research findings and new frontiers. *Journal of Family Theory & Review*, *12*(3), 305–320. https://doi.org/10.1111/jftr.12385
Graham, E. K., Beck, E. D., Jackson, K., Yoneda, T., McGhee, C., Pieramici, L., Atherton, O. E., Luo, J., Willroth, E. C., Steptoe, A., Mroczek, D. K., & Ong, A. D. (2024). Do we become more lonely with age? A coordinated data analysis of nine longitudinal studies. *Psychological Science, 35*(6), 579-596. https://doi.org/10.1177/09567976241242037
Greif, G. L., & Woolley, M. E. (2015). Patterns in adult sibling relationships after the death of one or both parents. *Journal of Social Work in End-of-life & Palliative Care*, *11*(1), 74–89. https://doi.org/10.1080/15524256.2015.1021435
Gurung, R. A. R., Taylor, S. E., & Seeman, T. E. (2003). Accounting for changes in social support among married older adults: Insights from the MacArthur studies of successful aging. *Psychology and Aging*, *18*(3), 487–496. https://doi.org/10.1037/0882-7974.18.3.487
Heley, E., & Hewitt, B. (2022). Same-sex marriage and remarriage in Australia, 2018–2020. *Australian Population Studies*, *6*(1), 1–14. https://doi.org/10.37970/aps.v6i1.96
Hornstra, M., & Ivanova, K. (2023). Kinkeeping across families: The central role of mothers and stepmothers in the facilitation of adult intergenerational ties. *Sex Roles*, *88*, 367–382. https://doi.org/10.1007/s11199-023-01352-2
Ilinca, S., Rodrigues, R. R., Fors, S., Zólyomi, E., Jull, J., Rehnberg, J., Vafaei, A., & Phillips, S. D. (2022). Gender differences in access to community-based care: A longitudinal analysis of widowhood and living arrangements. *European Journal of Ageing*, *19*, 1339–1350. https://doi.org/10.1007/s10433-022-00717-y
Jolly, P. M., Kong, D. T., & Kim, K. Y. (2020). Social support at work: An integrative review. *Journal of Organizational Behavior*, *42*(2), 229–251. https://doi.org/10.1002/job.2485
Kaganas, F., & Piper, C. (2020). Grandparent contact: Another presumption? *Journal of Social Welfare and Family Law*, *42*(2), 176–203. https://doi.org/10.1080/09649069.2020.1751932
Kahn, R. L., & Antonucci, T. C. (1980) Convoys over the life course: Attachment, roles and social support. In P. B. Baltes & O. G. Brim Jr. (Eds.), *Life-span development and behavior* (pp. 253–267). Academic Press.
Kalmijn, M., & Leopold, T. (2019). Changing sibling relationships after parents' death: The role of solidarity and kinkeeping. *Journal of Marriage and Family*, *81*(1), 99–114. https://doi.org/10.1111/jomf.12509
Kasar, K. S., & Karaman, E. (2021). Life in lockdown: Social isolation, loneliness and quality of life in the elderly during the COVID-19 pandemic: A scoping review. *Geriatric Nursing, 42*(5), 1222–1229. https://doi.org/10.1016/j.gerinurse.2021.03.010
Kent, E. E., Mollica, M. A., Dionne-Odom, J. N., Ferrer, R. A., Jensen, R. E., Ornstein, K. A., & Smith, A. W. (2020). Effect of instrumental support on distress among family caregivers: Findings from a nationally representative study. *Palliative & Supportive Care, 18*(5), 519–527. https://doi.org/10.1017/S1478951520000036
Kida, H., Niimura, H., Eguchi, Y., Suzuki, K., Shikimoto, R., Bun, S., Takayama, M., & Mimura, M. (2024). Relationship between life satisfaction and psychological characteristics among community-dwelling oldest-old: Focusing on Erikson's developmental stages and the big five personality traits. *American Journal of Geriatric Psychiatry, 32*(6), 724–735. https://doi.org/10.1016/j.jagp.2023.12.018
Kimbler, K. J., & Margrett, J. A. (2009). Older adults' interactive behaviors during collaboration on everyday problems: Linking process and outcome. *International Journal of Behavioral Development*, *33*(6), 531–542. https://doi.org/10.1177/0165025409343754
Landis, M., Peter-Wight, M., Martin, M., & Bodenmann, G. (2013). Dyadic coping and marital satisfaction of older spouses in long-term marriage. *GeroPsych*, *26*(1), 39–47. https://doi.org/10.1024/1662-9647/a000077
Liu, C., Badana, A. N. S., Burgdorf, J., Fabius, C. D., Roth, D. L., & Haley, W. E. (2021). Systematic review and meta-analysis of racial and ethnic differences in dementia caregivers' well-being. *The Gerontologist, 61*(5), e228–e243. https://doi.org/10.1093/geront/gnaa028
Liversage, A. (2021). Remarriage among older immigrants and their host country peers—a countrywide study. *Migration Letters, 18*(3), 349–360.
Lu, L. (2017). Creating well-being among older people: An Eastern perspective. In C. L. Cooper & J. C. Quick (Eds.), *The handbook of stress and health: A guide to research and practice* (1st ed., pp. 388–399). Wiley Blackwell. https://doi.org/10.1002/9781118993811.ch23
Lu, S., Yupan, W., Mao, Z., & Liang, X. (2020). Association of formal and informal social support with health-related quality of life among Chinese rural elders. *International Journal of Environmental Research and Public Health*, *17*(4), 1351. https://doi.org/10.3390/ijerph17041351
Mayol-Garcia, Y., Gurrentz, B., & Kreider, R. M. (2021). Number, timing, and duration of marriages and divorces: 2016. U. S. Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2021/demo/p70-167.pdf
McWilliams, S., & Barrett, A. E. (2014). Online dating in middle and later life: Gendered expectations and experiences. *Journal of Family Issues*, *35*(3), 411–436. https://doi.org/10.1177/0192513x12468437
Mekonnen, H. S., Lindgren, H., Geda, B., Azale, T., & Erlandsson, K. (2023). Being an elderly person living in metropolitan cities of northwestern Ethiopia: A descriptive phenomenological study. *Clinical Interventions in Aging, 18*, 205–218. https://doi.org/10.2147/CIA.S389305
Müller, F., Röhr, S., Reininghaus, U., & Riedel-Heller, S. G. (2021). Social isolation and loneliness during COVID-19 lockdown: Associations with depressive .symptoms in the German old-age population. *International Journal of Environmental Research and Public Health*, *18*(7), 3615. https://doi.org/10.3390/ijerph18073615
Munnell, A. H., Sanzenbacher, G., & Zulkarnain, A. (2020). What factors explain the decline in widowed women's poverty? *Demography, 57*(5), 1881–1902. https://doi.org/10.1007/s13524-020-00915-2
Okun, S., & Ayalon, L. (2023). The paradox of subjective age: Age(ing) in the self-presentation of older adults. *International Psychogeriatrics, 35*(10), 566-575. https://doi.org/10.1017/S1041610222000667
Osmani, N., Matlabi, H., & Rezaei, M. (2017). Barriers to remarriage among older people: Viewpoints of widows and widowers. *Journal of Divorce & Remarriage, 59*(1), 51–68. https://doi.org/10.1080/10502556.2017.1375331

Pandya, S. (2005). Racial and ethnic differences among older adults in long-term care service use. AARP Public Policy Institute. https://www.aarp.org/home-garden/livable-communities/info-2005/fs119_ltc.ht
Perkins, J. M., Lee, H.-Y., James, K. S., Oh, J., Krishna, A., Heo, J., Lee, J.-K., & Subramanian, S. V. (2016). Marital status, widowhood duration, gender and health outcomes: A cross-sectional study among older adults in India. *BMC Public Health, 16*(1), 1032. https://doi.org/10.1186/s12889-016-3682-9
Peterson, C. C. (1999). Grandfathers' and grandmothers' satisfaction with the grandparenting role: Seeking new answers to old questions. *International Journal of Aging & Human Development*, *49*(1), 61–78. https://doi.org/10.2190/gudm-6ce3-17wf-7n96
Pontinen, H. M., Medvene, L. J., & Gerstenkorn, J. (2019). Possible selves of older adults entering a life plan community. *Educational Gerontology, 45*(3), 201–213. https://doi.org/10.1080/03601277.2019.1601400
Portz, J. D., Elsbernd, K., Plys, E., Ford, K. L., Zhang, X., Gore, M. O., Moore, S. L., Zhou, S., & Bull, S. (2020). Elements of social convoy theory in mobile health for palliative care: Scoping review. *JMIR mHealth and uHealth*, *8*(1), e16060. https://doi.org/10.2196/16060
Raley, R. K., & Sweeney, M. M. (2020). Divorce, repartnering, and stepfamilies: A decade in review. *Journal of Marriage and Family*, *82*(1), 81–99. https://doi.org/10.1111/jomf.12651
Rosenthal, C. J. (1985). Kinkeeping in the familial division of labor. *Journal of Marriage and Family*, *47*(4), 965–974. https://doi.org/10.2307/352340
Shiba, K., Kondo, N., & Kondo, K. (2016). Informal and formal social support and caregiver burden: The AGES caregiver survey. *Journal of Epidemiology*, *26*(12), 622–628. https://doi.org/10.2188/jea.je20150263
Streeter, J. L. (2020). Gender differences in widowhood in the short-run and long-run: Financial, emotional, and mental wellbeing. *The Journal of the Economics of Ageing, 17*, 100258. https://doi.org/10.1016/j.jeoa.2020.100258
Thomeer, M. B., Mudrazija, S., & Angel, J. L. (2015). How and why does nursing home use differ by race and ethnicity? *The Journals of Gerontology Series B*. https://doi.org/10.1093/geronb/gbv056
Tobin, S. S., & Neugarten, B. L. (1961). Life satisfaction and social interaction in the aging. *Journal of Gerontology, 16*(4), 344–346. https://doi.org/10.1093/geronj/16.4.344
Treas, J. & Mazumdar, S. (2004). Kinkeeping and caregiving: Contributions of older people in immigrant families. *Journal of Comparative Family Studies, 35*(1), 105–122. https://www.jstor.org/stable/41603919
Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin*, *139*(1), 53–80. https://doi.org/10.1037/a0028601
White, L. T. (2001). Sibling relationships over the life course: A panel analysis. *Journal of Marriage and Family*, *63*(2), 555–568. https://doi.org/10.1111/j.1741-3737.2001.00555.x

16.3 Retirement in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the important factors in the decision to retire
- Describe the various styles of or approaches to retirement
- Explain common barriers to retirement

Clarence is in his early sixties and starting to consider retiring from his job as a crane operator for a construction firm. In fact, he just had a meeting with the human resources department about his retirement plan that spurred him to think more seriously about this. Because some of his friends have retired, he knows that retirement doesn't look the same for everyone. Some of his friends spend their days tending to grandchildren or enjoying hobbies. Others have felt financial strain and returned to work at least part time. And he knows others who'd like to retire but continue to work because they won't qualify for Medicare until they turn sixty-five years old and can't afford to pay for health insurance out of pocket. With all this in mind, Clarence thinks about his finances and what he hopes his life will look like when he leaves his position.

In this section, you'll learn about financial and nonfinancial considerations related to stepping away from work or a career, and public policies that made retirement more accessible for decades and more recent policies that have reversed that trend.

Considerations for Retirement

Retirement, the act of permanently leaving the workforce, is something many adults experience. Considering when to retire, planning for retirement, and deciding what a retired life will look like are all important parts of the process (Figure 16.11). You should recognize, however, that retirement isn't universal; therefore, it should be considered a common part of adult life but not an inevitable one.

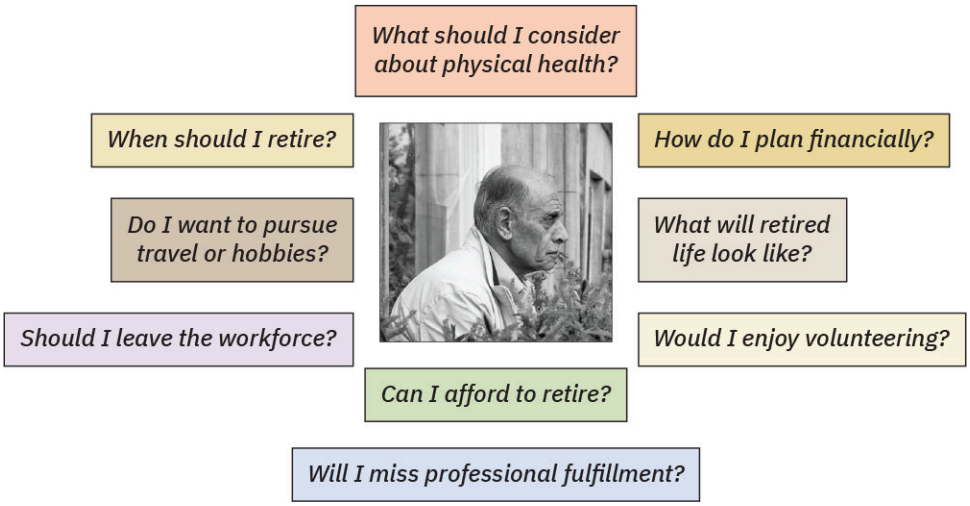


FIGURE 16.11 Older adults ponder many important questions when making retirement decisions. (credit center: modification of work "Think about" by Daniel Steuri/Flickr, CC BY 2.0; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Since retirement brings about major life changes, older adults must navigate many issues in taking this step. The most obvious is financial preparation since leaving the workforce necessitates a change in how one's income is attained. Considering that the average retirement age in the United States is around age sixty-four years (Warshawsky, 2022) and average life expectancy is twelve to fifteen years longer than that, careful financial planning is crucial. This is why financial experts recommend starting to save for retirement as early as possible, to benefit from the effects of time and compound interest on any investments. Recent data indicate that 61 percent of adults over age fifty years are worried they won't have enough to live on in retirement, and 20 percent of adults over age fifty years aren't saving for it at all (Brown, 2024). This may force older adults in the United States, for example, to rely on Social Security, which may not provide enough funds to cover all living expenses.

LINK TO LEARNING

Financial experts point to the benefits of compound interest as a compelling reason to start saving for retirement as soon as you begin generating a stable income. This article from CNBC describes why many people disregard the potential benefits of compound interest (https://openstax.org/r/104saveretire) and provides suggestions for getting an early start on retirement savings.

Assume you took the advice about retirement savings seriously and had the means to build a sizable nest egg. You've overcome a major obstacle, but you still have other things to consider, such as whether you *want* to retire. Research indicates that working can provide many benefits beyond financial security. For example, cognitive stimulation commonly decreases in retirement, and this has been associated with increasing cognitive decline experienced shortly after leaving work (Celidoni et al., 2017). Work can have socioemotional benefits as well, such as social interactions, friendships, and a sense of fulfillment and identity (Xiao et al., 2020; Zhang et al., 2022).

Despite these potential benefits, most individuals eventually retire. And much like work, retirement itself can have benefits. A review of twenty-two longitudinal studies found that most retirees report benefits to mental health, such as lower levels of depression, anxiety, or stress (van der Heide et al., 2013). Improved mental health isn't surprising considering many retirees are trading a stressful or demanding time at work for more enjoyable activities of choice (Cohen-Mansfield & Regev, 2018). Retirement can also be a time of renewed identity exploration as new retirees redefine many of their relationships and activities (Barnes & Parry, 2004; Moffatt & Heaven, 2017).

A Vision for Retirement

When they think of retiring, many people imagine spending their free time enjoying life. Research suggests that leisure goals are a priority for many retirees, such as engaging in hobbies (Scherger et al., 2011), traveling (Siren & Haustein, 2016), exercising (Barnett et al., 2012), volunteering, and even other kinds of work. However, the way people actually spend their time after retirement is strongly associated with SES and health, and low SES and poor health are associated with lower participation in leisure activities (Scherger et al., 2011). Responsibilities like caregiving can also limit people's opportunities to choose what they want their retirement to look like.

Some older adults spend their retirement working. This seems counterintuitive, yet the data are clear: many older adults work in retirement, though often in different capacities than before. When a person of retirement age leaves the workplace gradually instead of abruptly, it is referred to as **phased retirement**. They might work decreasing hours, for instance, or take on more remote work or contract work until they are fully retired (Henkens et al., 2021; Johnson, 2011). Another option is **bridge employment**, which is a different job a person takes on after retiring, either in the same profession they had or in a completely different field (Kalokerinos et al., 2015). For example, a retired postal employee may work concessions at a theme park in Orlando, Florida, as a form of such employment.

These less traditional forms of retirement can benefit both employers and older workers. Employers benefit from having experienced workers on hand who can not only perform their own tasks but also help train new staff. Workers who aren't ready to retire can slowly decrease their workload but still earn income until they retire completely. Those who are becoming less able to keep up with the demands of their job can lighten responsibilities before fully leaving the workforce.

While some older adults opt to continue with paid work in some capacity, many others take on volunteer work. Around one in four retirees volunteer, nearly identical to the percentage of younger volunteers, but older workers donate almost 40 percent more hours (Turner et al., 2020). They typically report that volunteering benefits themselves, those they serve, their families, and their communities (Morrow-Howell et al., 2009)(Figure 16.12).

(a) (b)

FIGURE 16.12 Older adults may enjoy the social interaction and personal fulfillment that come from volunteering, such as (a) helping people interested in astronomy enjoy the night skies or (b) encouraging older adults to remain active through seated circle dancing. (credit a: modification of work "Astronomy Volunteer 5" by Mount Rainier National Park/Flickr, CC BY 2.0; credit b: modification of work "Local volunteering makes a huge difference" by NCVO London/Flickr, CC BY 2.0)

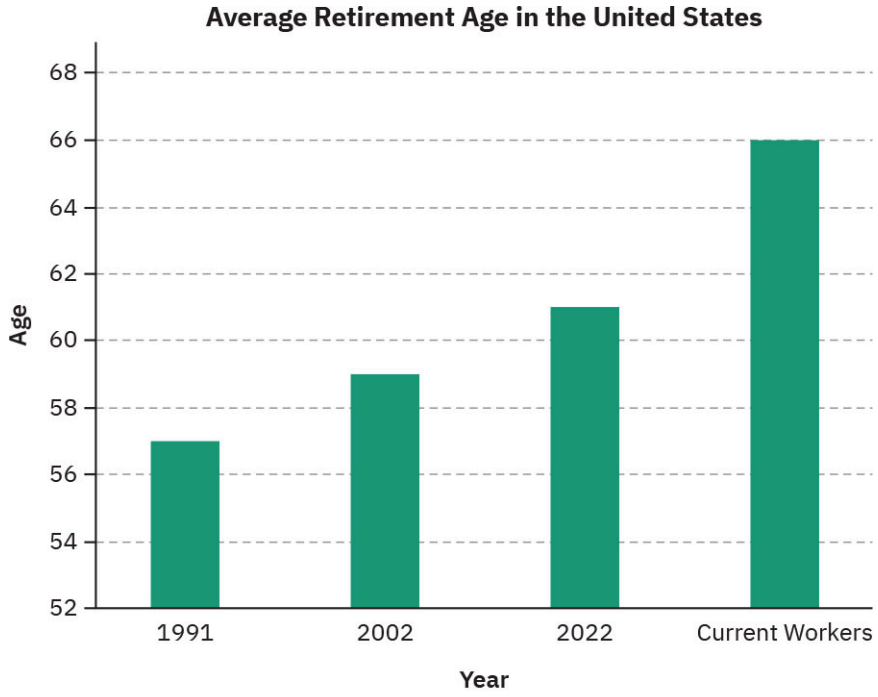
It appears that engagement with volunteer work is most common in the earlier stages of retirement. Over time, however, retirees are likely to stop volunteering. While this decision could be due to health and other age-related declines, research suggests that many retirees learn about volunteer opportunities through their work relationships. As time passes, some of these relationships aren't maintained, potentially decreasing both information and motivation (Tang, 2016).

Barriers to Retirement

As mentioned, retirement is a common life event for many people. Figures from the Congressional Research Service suggest that from 2012 to 2022, the percentage of the retired U.S. adult population increased dramatically, from 16.1 to 19.3 percent (Li, 2022). But this increase is mainly due to longer life expectancy and the large number of retiring baby boomers, not an increase in retirement accessibility. From at least the early twentieth century until the mid-1980s, retirement grew increasingly accessible in the United States, largely due to the introduction of Social Security benefits and improved economic conditions, and the average age of retirement trended steadily downward. In 1985, however, that trend started to reverse, and we now see a consistent picture of older adults having to remain in the workforce well into their later years (Garber, 2024; Quinn, 1999). In fact, there are several threats and barriers to retirement on both individual and societal levels.

Financial Barriers

One obvious challenge is simply not being able to afford retirement. This has resulted in a current trend to delay retirement, allowing time to save more (Garber, 2024) (Figure 16.13).



Source: Jones, J. (2022). More in U.S. retiring, or planning to retire, later. Gallup.

FIGURE 16.13 This figure shows recent increases in the U.S. retirement age. The "Current Workers" column reflects the age at which individuals currently in the workforce expect to be able to retire. (data source: Gallup; attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

A recent study concluded that 75 percent of U.S. workers aren't saving enough to retire at their current cost of living and will have to make serious cuts to their living expenses and/or work beyond the typical retirement age (Gomes et al., 2020) (Figure 16.14).

(a) (b)

FIGURE 16.14 Many older workers are forced to remain in the workforce due to financial need, such as these individuals, working as (a) a custodian and (b) a bus driver. (credit a: modification of work "Keeping School Buildings Ready" by Phil Roeder/Flickr, CC BY 2.0; credit b: modification of work "Bus Driver Man, outside the Metropolitan Museum of Art" by Jenni Douglas/Flickr, CC BY 2.0)

LINK TO LEARNING

Read about how more people are realizing in older age that they are not financially able to retire (https://openstax.org/r/104strugglesave) to learn more. This story from CNN describes this dilemma in greater detail and profiles people in this situation.

Why are people financially unprepared for retirement these days? Has knowledge about investment strategies and financial planning decreased since 1985? The answer probably lies in policy changes that altered the financial landscape of retirement in the U.S. Until the 1970s, the predominant method of saving for retirement among the U.S. workforce was the traditional **pension plan**. A pension plan is an invested fund operated and managed by an employer. The employer assumes all the risk of fluctuating market investments and agrees to pay employees an established income from the fund, guaranteed for life (Friedberg & Owyang, 2002). However, in 1978, Congress passed a new tax code that introduced the 401(k) plan as an alternative to pension plans. Since then, pensions have become much more rare as retirement plans.

In a **401(k) plan**, employees must contribute to their own retirement fund, and the employer may match these contributions up to a certain percentage of income. Employers typically provide a range of funding plans for employees to choose from, but decisions and risks related to investments and withdrawals ultimately fall on the employee (Lee, 2022). Thus, the balance in 401(k) plans depends on the amount saved, how much of it the employer matched, and how much money the investments earned given the employee's investment choices. Unlike a pension plan, a 401(k) carries no guarantee of income during retirement, meaning the balance can be depleted, which might force retirees to reenter the workforce or rely on a retirement benefit program alone, such as Social Security in the United States. That said, 401(k) plans have some benefits. They can follow the employee from job to job, which is better suited to today's more mobile work (Lee, 2022). However, nearly half the U.S. workforce, about fifty-seven million people, lacks access to an employer-provided retirement plan, and this is even more likely to be the case for people in low-income jobs and people of color (John et al., 2022).

Societal issues can also be a factor in financial readiness to retire. Many workers in the United States are not paid a living wage, meaning their income is not enough to provide for basic needs such as food, housing, transportation, and childcare, much less save for retirement. Data released by the Massachusetts Institute of Technology indicate the average living wage for a family of four with two working adults is $25.02 per hour, but the federal minimum wage is only $7.25 per hour (Glasmeier, 2023), although some states have minimum wage laws at higher levels of pay. Nearly a third of workers (32 percent) are paid less than $15 per hour, especially women and people of color (Henderson, 2022). For these individuals, meeting current needs is a

huge challenge, and many are forced to rely on public assistance and charity despite working full time.

As a result, many workers with low incomes frequently have no retirement income beyond Social Security benefits and are at increased risk of poverty and food insecurity in retirement. Both poverty and food insecurity are more common among younger than older baby boomers (Mudražija & Butrica, 2022), suggesting that the change from employer-provided pensions to 401(k) plans may already be affecting retirees' financial security.

INTERSECTIONS AND CONTEXTS

Retirement Around the World

Not surprisingly, different countries have different approaches to supporting older adults. Here are a few examples of different policies.

- In Jamaica, the National Council for Senior Citizens provides services such as home health aides, meal and grocery delivery, and housekeeping to all older adults free of charge and regardless of income. There's also a special program to help pay for prescription medicines for certain chronic illnesses like asthma and diabetes (Jamaican Information Service, 2021).
- Japan has two public pension systems, one of which is available to people who are self-employed and spouses of employees. There are also employer-sponsored plans similar to 401(k) plans (Investment Company Institute, 2021).
- South Africa provides a pension for citizens, permanent residents, and refugees over the age of sixty years. This pension is primarily meant to support older adults with low incomes, so there are certain income and asset requirements to qualify (South African Government, 2024).
- Nepal provides small allowances and pensions for older adults, including widows (through the Single Women's Allowance program), but much of the instrumental and financial support for older adults comes from family members, community groups, and religious organizations. Most health care is private and expensive, placing a large financial burden on families (Shrestha et al., 2021).
- The Canadian pension system is available to anyone over age sixty years who has made at least one contribution to the plan. This contribution can be made through employment or through credits received from spouses including ex-spouses or common-law partners at the end of a relationship. People who took time off work due to disability, health problems, or childrearing may be able to get partial credit toward contributions (Government of Canada, 2024).

Additional Barriers

Some people experience additional barriers to retirement. Psychologically, they may continue in their job to escape the "occupational void" and loss of identity they associate with leaving the workforce (Bratun & Zurc, 2020). Still others may be anxious about whether they will be able to manage their increased free time and find meaningful things to do, and thus they continue to work (Penn & Lent, 2021).

Social factors can also contribute to anxiety about retirement. Someone with a strong social network may have the instrumental and emotional support to retire earlier. But social responsibilities can also delay retirement. For example, many people wait until their children are completely independent or until their spouse can retire as well (Wang & Shi, 2014).

Health is another potential barrier. For some individuals, health concerns may force an earlier retirement. Research suggests that workers with low incomes are more likely to be forced into early retirement for health reasons, which can create a financial strain for those unable to obtain disability-related financial support (Rad et al., 2017). Health problems can also affect retirement if they prevent retirees from engaging in desired activities. This drawback can result in a lower quality of life during retirement (De León et al., 2020).

References

Barnes, H. M., & Parry, J. (2004). Renegotiating identity and relationships: Men and women's adjustments to retirement. *Ageing & Society*, *24*(2), 213–233. https://doi.org/10.1017/s0144686x0300148x

Barnett, I., van Sluijs, E. M. F., & Ogilvie, D. (2012). Physical activity and transitioning to retirement. *American Journal of Preventive Medicine*, *43*(3), 329–336. https://doi.org/10.1016/j.amepre.2012.05.026

Bratun, U., & Zurc, J. (2020). The motives of people who delay retirement: An occupational perspective. *Scandinavian Journal of Occupational Therapy*, *29*(6), 482–494. https://doi.org/10.1080/11038128.2020.1832573

Brown, S. K. (2024, January). *AARP Financial Security Trends Survey*. AARP Research. https://doi.org/10.26419/res.00525.040

Celidoni, M., Bianco, C. D., & Weber, G. (2017). Retirement and cognitive decline. A longitudinal analysis using SHARE data. *Journal of Health Economics*, *56*, 113–125. https://doi.org/10.1016/j.jhealeco.2017.09.003

Cohen-Mansfield, J., & Regev, I. (2018). Retirement preparation programs: An examination of retirement perceptions, self-mastery, and well-being. *Research on Social Work Practice*, *28*(4), 428–437. https://doi.org/10.1177/1049731516645194

de León, L. P., Mangín, J. P. L., & Ballesteros, S. (2020). Psychosocial determinants of quality of life and active aging. A structural equation model. *International Journal of Environmental Research and Public Health*, *17*(17), 6023. https://doi.org/10.3390/ijerph17176023

Friedberg, L. & Owyang, M. T. (2002). Not your father's pension plan: The rise of 401(k) and other defined contribution plans. *Review/Federal Reserve Bank of St. Louis*, 84(1), 23–34. https://research.stlouisfed.org/publications/review/2002/01/01/not-your-fathers-pension-plan-the-rise-of-401k-and-other-defined-contribution-plans

Garber, J. (2024, May 22). What is the average retirement age in the U.S.? NerdWallet. https://www.nerdwallet.com/article/investing/social-security/average-retirement-age-us#:~:text=The%20average%20retirement%20age%20in%20the%20United%20States%20is%2061,retire%20at%2066%20on%20average

Glasmeier, A. K. (2023). 2023 Living wage calculator. Massachusetts Institute of Technology. https://livingwage.mit.edu/articles/103-new-data-posted-2023-living-wage-calculator

Gomes, F., Hoyem, K., Hu, W.-Y., & Ravina, E. (2020, February 4). Retirement savings adequacy in U.S. defined contribution plans. *Social Science Research Network*. https://doi.org/10.2139/ssrn.3294422

Government of Canada. (2024). CPP retirement pension. https://www.canada.ca/en/services/benefits/publicpensions/cpp.html

Henderson, K. (2022, March 21). The crisis of low wages in the US. Oxfam. https://www.oxfamamerica.org/explore/research-publications/the-crisis-of-low-wages-in-the-us/

Henkens, K., van Dalen, H. P., & van Solinge, H. (2021). The rhetoric and reality of phased retirement policies. *Public Policy & Aging Report, 31*(3), 78–82. https://doi.org/10.1093/ppar/prab012

Investment Company Institute. (2021). The Japanese retirement system. https://www.ici.org/system/files/2021-12/21_bro_japanese_retirement.pdf

Jamaican Information Service. (2021, September 30). Government support for the elderly. https://jis.gov.jm/information/get-the-facts/government-support-for-the-elderly/

John, D., Koenig, G., & Malta, M. (2022). Payroll deduction retirement programs build economic security. AARP Public Policy Institute. https://doi.org/10.26419/ppi.00164.001

Johnson, R. W. (2011). Phased retirement and workplace flexibility for older adults: Opportunities and challenges. *Annals of the American Academy of Political and Social Science*, *638*(1), 68–85. https://doi.org/10.1177/0002716211413542

Jones, J. M. (2022, July 22). More in U.S. retiring, or planning to retire, later. Gallup. https://news.gallup.com/poll/394943/retiring-planning-retire-later.aspx

Kalokerinos, E. K., von Hippel, C., & Henry, J. D. (2015). Job attitudes are differentially associated with bridge employment and phased retirement among older Australian employees. *Work, Aging and Retirement*, *1*(2), 190–201. https://doi.org/10.1093/workar/wau014

Lee, J. (2022, April 28). How 401(k) accounts killed pensions to become one of the most popular retirement plans for U.S. workers. *CNBC*. https://www.cnbc.com/2021/03/24/how-401k-brought-about-the-death-of-pensions.html

Li, Z. (2022, Jun 27). Retirement Trends in United States, 2000–2022. Congressional Research Service. https://crsreports.congress.gov/product/pdf/IN/IN11959#:~:text=Figure%201%20shows%20that%20the,March%202022%20(19.3%25)%20period

Moffatt, S., & Heaven, B. (2017). 'Planning for uncertainty': Narratives on retirement transition experiences. *Ageing & Society*, *37*(5), 879–898. https://doi.org/10.1017/s0144686x15001476

Morrow-Howell, N., Hong, S.-I., & Tang, F. (2009). Who benefits from volunteering? Variations in perceived benefits. *Gerontologist*, *49*(1), 91–102. https://doi.org/10.1093/geront/gnp007

Mudražija, S., & Butrica, B. A. (2022). The dynamic nature of poverty and food insecurity among older adults: Evidence from the health and retirement study. *Applied Economic Perspectives and Policy*, *45*(1), 262–279. https://doi.org/10.1002/aepp.13329

Penn, L. T., & Lent, R. W. (2021). Retiring or rewiring? Test of a social cognitive model of retirement planning. *Journal of Counseling Psychology*, *68*(5), 538–549. https://doi.org/10.1037/cou0000530

Quinn, J. F. (1999, May 11). *Has the early retirement trend reversed?* Boston College Working Papers in Economics, No. 424. Boston College Department of Economics. https://econpapers.repec.org/paper/bocbocoec/424.htm

Scherger, S., Nazroo, J., & Higgs, P. (2011). Leisure activities and retirement: Do structures of inequality change in old age? *Ageing & Society*, *31*(1), 146–172. https://doi.org/10.1017/s0144686x10000577

Shrestha, S., Aro, A. R., Shrestha, B., & Thapa, S. (2021). Elderly care in Nepal: Are existing health and community support systems enough. *SAGE Open Medicine, 9*, 20503121211066381. https://doi.org/10.1177/20503121211066381

Siren, A. K., & Haustein, S. (2016). How do baby boomers' mobility patterns change with retirement? *Aging & Society*, *36*(5), 988–1007. https://doi.org/10.1017/s0144686x15000100

South African Government (2024). Old age pension. https://www.gov.za/services/services-residents/social-benefits/old-age-pension

Tang, F. (2016). Retirement patterns and their relationship to volunteering. *Nonprofit and Voluntary Sector Quarterly*, *45*(5), 910–930. https://doi.org/10.1177/0899764015602128

Turner, J. A., Klein, B. W., & Sorrentino, C. (2020, July). Making volunteer work visible: Supplementary measures of work in labor force statistics. *Monthly Labor Review*. https://doi.org/10.21916/mlr.2020.15

van der Heide, I., van Rijn, R. M., Robroek, S. J. W., Burdorf, A., & Proper, K. I. (2013). Is retirement good for your health? A systematic review of longitudinal studies. *BMC Public Health, 13*, 1180. https://doi.org/10.1186/1471-2458-13-1180

Wang, M., & Shi, J. (2014). Psychological research on retirement. *Annual Review of Psychology*, *65*, 209–233. https://doi.org/10.1146/annurev-psych-010213-115131

Warshawsky, M. J. (2022, May). *The average US retirement age increased over the past 30 years*. American Enterprise Institute. https://www.aei.org/wp-content/uploads/2022/05/The-Average-US-Retirement-Age-Increased-over-the-Past-30-Years.pdf

Xiao, J., Mao, J.-Y., Quan, J., & Qing, T. (2020). Relationally charged: How and when workplace friendship facilitates employee interpersonal citizenship. *Frontiers in Psychology, 11*. https://doi.org/10.3389/fpsyg.2020.00190

Zhang, Y., Sun, J.-M., Shaffer, M. A., & Lin, C.-H. (2022). High commitment work systems and employee well-being: The roles of workplace friendship and task interdependence. *Human Resource Management*, *61*(4), 399–421. https://doi.org/10.1002/hrm.22093

16.4 Living Environments and Aging in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe various housing environments for older adults
- Identify the benefits and concerns associated with each type of environment

Davine is eighty-three years old and lives alone. She hopes to stay in her home and live independently for the rest of her life. However, a few weeks ago she nearly fell getting out of the shower, and since then she's been thinking about how she would care for herself if she had a serious injury or health problem. She decided to investigate installing support rails in the bathroom and making a few other easy changes that could prevent a

fall, such as getting rid of slippery floor rugs. She also identified two home health organizations in case she might need more help in the future.

Older age can pose challenges related to living environments. Some older adults may need to scale down as home maintenance becomes more demanding. Others may need to move due to declines in health or functional ability. High-functioning older adults with financial resources may seek out facilities with amenities and opportunities for socialization. In this section, you'll learn about these varying needs and the housing situations individuals may consider in striving to meet them.

Aging in Place and Caregiver Support

When you think of living environments in older age, you might imagine institutional settings such as assisted living or nursing home facilities. Currently, however, fewer than 5 percent of U.S. adults aged sixty-five years and older live in an institutional setting (Hallstrom, 2023). Most older adults live at home.

The effort to live safely and comfortably at home while maintaining as much independence as possible is known as **aging in place,** and older adults generally prefer it; around eight in ten say they prefer to grow old in their home and community (AARP, 2021).

The primary motivations for wanting to age in place are maintaining daily independence and control of personal space (Ahn et al., 2017). There may also be measurable benefits. For example, aging in place is associated with better cognitive ability, less depression, and greater independence and functional ability than is found among nursing home residents (Marek et al., 2005). Older adults rate living at home as the optimal environment for very old adults (ages eighty years and older), including those with health problems, difficulty dressing, and mobility limitations (Kasper et al., 2018).

Research has typically considered two types of functional ability in older age: activities of daily living and instrumental activities of daily living. An **activity of daily living (ADL)** is an everyday self-care task, such as feeding yourself, bathing, and moving around your environment (Katz, 1983; Zawaly et al., 2022). People having difficulty performing ADLs require assistance from someone in their environment on a regular and consistent basis, typically several times a day (Figure 16.15).

(a) (b)

FIGURE 16.15 Most older adults are independent and able to take care of daily activities such as (a) food preparation and (b) household cleaning. (credit a: modification of work “Grandma Cooking” by Chris/Flickr, CC BY 2.0; credit b: modification of work “How to sweep the floor” by Kim Siever/Flickr, Public Domain)

There are some tasks that are considered more complex than ADLs, such as using the phone, shopping, preparing meals, doing laundry, managing medications, and dealing with finances (Lawton & Brody, 1969; Pashmdarfard & Azad, 2020). A task like this is referred to as an **instrumental activity of daily living (IADL)**. Someone who’s struggling with one or two IADL tasks may need help occasionally but not every day.

Is aging in place an option for individuals with ADL and IADL limitations? Possibly, because there are many resources to make this possible. One of the most common is the help of a caregiver. A **caregiver** is an individual who looks after and helps someone with health problems and difficulty performing ADLs and IADLs. Some are paid and trained, but many are just relatives or friends of the person in need.

Caregivers play a highly valuable role, but the work can be stressful, especially when informal caregivers undertake the task (Figure 16.16). Informal caregivers, such as spouses and adult children, are the most common unpaid caregivers to older adults (Avent, 2019). It's difficult to accept the reality of a loved one experiencing declining health and loss of independence, especially when that also means assuming the responsibility for that individual's well-being, daily needs, and health care. Undertaking the caregiving role has thus been associated with poorer health and more anxiety and depression (del-Pino-Casado et al., 2021; Haley et al., 2020; Ho et al., 2009; Schulz et al., 2020).

FIGURE 16.16 Many older adults can stay at home with the help of caregivers. (credit: modification of work "helping" by Harland Spinks/Flickr, CC BY 2.0)

Some health consequences may be directly related to caregiving responsibilities, such as back pain caused by lifting or moving the care recipient. Other research suggests that the chronic stress associated with caregiving is a source of health problems like high blood pressure and decreased immune system functioning (Haley et al., 2020; Schulz et al., 2020; Vitaliano et al., 2004). These risks are serious; individuals reporting demanding caregiving responsibilities had higher mortality rates than noncaregivers and caregivers with less demanding roles (Perkins et al., 2012; Schulz et al., 2020). These health problems can cause caregivers to end up needing care themselves, complicating the situation for everyone.

Caregiving situations can differ, often in complex ways, based on gender and cultural factors like race, ethnicity, and country of origin. Women are more likely to assume the role of primary caregiver and engage in more intense caregiving activities than men (Haley et al., 2020; Kim & Woo, 2022; Schulz et al., 2020). Women also devote more hours to caregiving and have greater mental and physical health declines associated with the role than men (Haley et al., 2020; Pinquart & Sörensen, 2006; Schulz et al., 2020). Within the United States, cross-cultural research has often, but not universally, demonstrated that Black caregivers report less burden and depression than White caregivers, potentially due to more positive appraisals of the caregiving relationship and an emphasis on religion as a source of comfort. Hispanic caregivers, on the other hand, tend to report high levels of caregiving-related distress as well as difficulty accessing services due to language barriers (Haley et al., 2020; Liu et al., 2021). Cultural factors may intersect with SES to influence the

accessibility of services, especially for families with low incomes who disproportionately tend to be people of color.

The care recipient's specific medical condition is another potential factor in caregiving. Caring for a family member with dementia can be especially difficult, for example, because of the progressive nature of the decline and the need for caregivers to manage ADLs, IADLs, and possibly behavior problems as well. Only one in ten older adults receiving caregiving at home has dementia, yet 41 percent of unpaid caregiving hours are devoted to dementia caregiving because it's such an intense and demanding task (Haley et al., 2020; Kasper et al., 2015; Liu et al., 2021; Schulz et al., 2020). The negative consequences associated with dementia caregiving may again vary by culture. For example, because East Asian culture regards dementia as a form of mental illness and also regards mental illnesses as shameful, dementia caregivers of East Asian and East Asian American descent often report high levels of distress, specifically due to the stigma associated with the care recipient's condition (Lim et al., 2020).

Another common resource for aging in place is home health aides. A **home health aide** is a professional who travels to clients' homes and assists with health care, ADLs, and IADLs. Home health aides can help older adults continue to live at home instead of relocating to long-term care. While most home health aides report a high level of fulfillment and job satisfaction, they're also financially vulnerable due to the low pay of the position (Bercovitz et al., 2011). Also, in the United States, naturalized citizens and legal noncitizen immigrants make up 26 percent of the nation's home health aides, despite representing only 12 percent of the general workforce population. Thus, changes in their ability to work in the United States may negatively impact care resources for older adults and those who have disabilities (Zallman et al., 2019).

Some resources promoting aging in place are located outside the home. At **adult daycare** centers, older adults participate in supervised activities that provide physical and cognitive stimulation as well as opportunities for social interaction. This also gives informal caregivers a break and enables them to run errands, go to work, or just relax. This resource is most frequently used for older adults who have dementia, which can limit their ability to be at home alone (Cohen-Mansfield et al., 2001; Tuohy et al., 2023).

Perhaps the most rapidly growing resource to support aging in place is technology. Social media, cell phones, and software such as guided mindfulness training apps can contribute to mental well-being by providing opportunities for social engagement, staying in touch with loved ones, and managing anxiety. Physical well-being can be enhanced through technologies such as fitness trackers, medication reminders, and online exercise options such as YouTube videos, and alarms and notification devices can call for assistance if there's a medical emergency or injury (Fang et al., 2016; Ollevier et al., 2020). More recently, technology applications and personal assistants have been found to help older adults access information, emergency contacts, and entertainment (O'Brien et al., 2019). Technologies have also expanded that support people with hearing or vision loss such as AI or personal assistants for visual support or applications that transcribe conversations for those who need auditory support. Apps that connect people to services such as food delivery and transportation can also be beneficial to older adults with IADL difficulties.

Independent Living Communities

While many people choose to age in place, some relocate to independent living communities designed for older adults. These are not considered institutional settings. Residents are completely independent, can come and go as they please, and enjoy the same freedom as all other adults. The only distinction is that the community is specifically intended for older adults (Figure 16.17). Typically, the living spaces have been customized with such aids as handrails for support and wheelchair accessibility ramps. Many age-restricted communities take care of all outside maintenance such as lawn work and snow removal, making the residence easier to maintain. They also tend to be located near transportation, health care, shopping, and other services (Chen et al., 2020). Older adults often report that they enjoy the amenities and the increased opportunities for socialization in these living situations (Bekhet et al., 2009).

(a) (b)

FIGURE 16.17 Independent living environments can help older adults maintain autonomy with assistive tools such as (a) ramps amenable to walkers and wheelchairs and (b) kitchens designed to accommodate the physical changes that occur with age so individuals can remain. (credit a: modification of work "Animo" by Sarah Stierch/Flickr, Public Domain; credit b: modification of work "UDLL-handicap-accessible-kitchen-sink" by Joffre Essley/Flickr, CC BY 2.0)

Some older adults with IADL limitations may require additional assistance. Living in **congregate housing** can offer more access to assistance than typical independent living communities while also maintaining residents' independence. Congregate housing arrangements are often similar to college dormitories in that there are private living areas and common spaces, such as dining areas or lounges. These facilities often have services such as a shuttle to help older adults with transportation, but they typically do not provide any medical services (Chum et al., 2022).

Using an intergenerational model, some European countries have developed innovative living options for older adults. In the Netherlands and France, there's a significant shortage of affordable housing for young adults, so young adults are matched with older adults and then move into their home, either a private dwelling or an older adult community. There are ground rules for the young adult to follow, such as requirements for socializing with the older adults, in return for the housing (Arentshorst et al., 2019; Labit & Dubost, 2016).

Germany and Denmark have more single older adults and few all-day childcare resources so in these countries intergenerational living often pairs older adults and families with children in designated buildings or complexes (not preexisting neighborhoods or buildings that just happen to have people of different generations as neighbors). The older adults often become surrogate grandparents. The communities may be managed by local governments, churches, nonprofit organizations, or even the residents themselves (Beck, 2019; Labit & Dubost, 2016). All these options have the potential to benefit their residents of all ages by enhancing social and emotional functioning as well as providing practical support (Beck, 2019).

Assisted Living and Nursing Homes

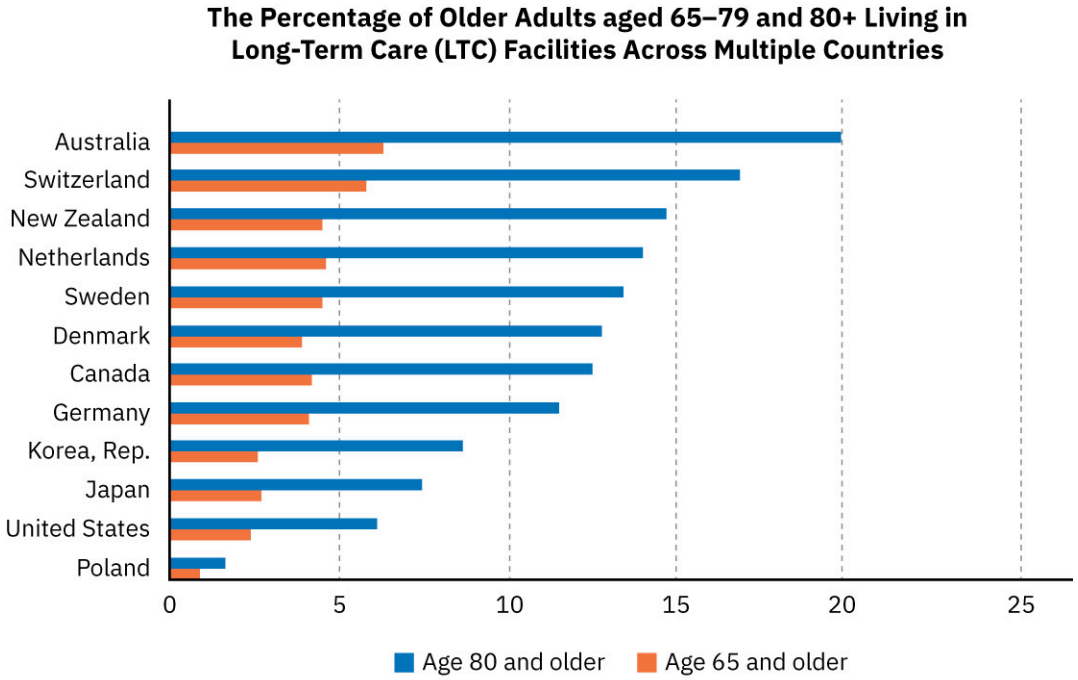
While many older adults prefer aging in place or independent living situations, in some cases these options may not be feasible or safe, and relocating to an institutional setting is necessary. Here "institutional setting" means a monitored facility in which residents typically lack the freedom to come and go as they please. Two types of institutional living environments primarily serve older adults, depending on the person's care needs:

- An **assisted living** facility is for individuals with physical and/or cognitive limitations that prevent them from living at home. Here they have access to many services such as meals and housekeeping. They also get assistance with IADL and ADL, such as help using the restroom, bathing, and taking medications.
- A **nursing home** is like an assisted living facility but also addresses medical care needs. It provides twenty-four-hour supervision that includes skilled nursing care and services such as occupational therapy, speech therapy, and physical rehabilitation. Nursing homes are the most common

institutionalized living environment for older adults.

Both assisted living and nursing home settings also generally have dedicated areas for residents with dementia. These are frequently referred to as memory care units and provide specific supervision and cognitive stimulation for residents who may be confused, disoriented, or unaware of their surroundings (National Institute on Aging, 2023).

Only 2.5 percent of U.S. adults sixty-five years of age and older reside in nursing homes, but the likelihood of needing this type of environment increases with age (Bom et al., 2023; Hallstrom, 2023). Data suggest that 16.9 percent of nursing home residents in the United States are under age sixty-five years, 19.5 percent are sixty-five to seventy years of age, 27.2 percent are seventy-five to eighty-four years of age, and 36.4 percent are age eighty-five years or older (Sengupta et al., 2022). Not all are there for the long term, however. Some people need short stays for rehabilitation after a serious health event such as surgery or a stroke. Others might remain for a short period while their homes are modified to accommodate physical limitations, such as adding wheelchair accessibility. The percentage of older adults residing in nursing homes varies from country to country (Figure 16.18) (Bom et al., 2023; Dyer et al., 2020).



Source: Dyer, S. M., et al. (2020). Is Australia over-reliant on residential aged care to support our older population? *The Medical journal of Australia, 213*(4), 156–157.

FIGURE 16.18 The top bar for each country shows the percentage of its residents aged eighty years and older who live in nursing homes. The bottom bar shows the percentage aged sixty-five years and older who live in nursing homes. Across all countries shown, a much higher percentage of nursing home residents are eighty years of age or older. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Figure 16.18 represents only affluent nations, largely in Europe and North America. Many lower-income nations, including in Africa and Central and South America, are experiencing aging societies as well and are seeing even larger increases in their older adult populations (Committee on Population, & National Academies of Sciences, Engineering, and Medicine, 2015; Velkoff & Kowal, 2007). Data about long-term care use and other health-care needs of older adults in these countries are less available, but most research suggests that the level of relliance on informal care provided at home by family members will not sustain the health needs of rapidly growing older populations (Kalideen et al., 2022; Robledo et al., 2022).

In some countries, a typical path for individuals unable to live independently would transition first to an

assisted living facility, and then to a nursing home facility if their health worsens. Making several moves into different communities may be less than ideal, however, and a rapidly growing trend is to move to older adult housing compatible with a variety of needs. This type of facility is known as a **continuing care community**. Continuing care communities typically have a section dedicated to independent living, consisting of freestanding homes or apartments. If residents' needs increase, some services such as transportation or meal preparation may be available, as in congregate housing environments. If more assistance is required, residents can move into assisted living or nursing home environments located on the same campus (National Institute on Aging, 2023). This allows older adults to maintain their independence as long as possible and have access to increasing levels of assistance without needing to relocate to different communities.

Financial and Safety Considerations of Different Settings

Care of older adults can be a large expense that requires planning and access to resources. Even when someone is aging at home, hiring home health aides and making home modifications like installing wheelchair ramps costs money. Although Medicare may pay for some types of at-home services such as physical therapy and other skilled care (Medicare.gov, n.d.), homemaker and home health services cost an average of about $5,000 per month (Kaldy et al., 2024).

Informal caregiving isn't without cost either because informal caregivers are likely to quit their jobs or reduce their work hours to accommodate their caregiving, reducing income. Women are particularly likely to encounter this situation because they typically take on more caregiving responsibilities than men (Lee & Tang, 2015; Schulz et al., 2020). A recent study found that loss of income was one of the most consistent challenges expressed by caregivers (Nadash et al., 2023). Programs operated by Medicaid and other agencies aim to reduce the financial burden for individuals who leave the workforce to care for a loved one. Many of these programs have been criticized, however, for having rigid requirements, limits on enrollment, and long waitlists.

Congregate housing and independent living communities, while a potential alternative to both home and institutional care, have their own obstacles to financial access. In the United States, congregate housing programs are typically available only for residents of federally subsidized housing (United States Department of Housing and Urban Development, n.d.), meaning that some people may have income too high to qualify for this option but too low to make other options feasible. Independent living communities tend to be expensive—the median cost in the United States is about $3,000 per month (Shuman, 2024)—and these aren't typically covered by insurance because they don't provide medical services.

In the United States, the cost of living in long-term care facilities can be extremely high. The average cost of staying in a private room at a nursing home is $9,000 per month, and assisted living costs about half that. Medicare doesn't typically cover nursing home living, though it may cover up to 100 days of rehabilitation services or skilled nursing care. Some options such as long-term care insurance can help cover these expenses, but these policies are expensive, must be purchased while you're still independent and in good health, and aren't available for people with certain health conditions, such as muscular dystrophy (Kaldy et al., 2023).

Most individuals don't or can't adequately prepare for long-term care in later life, and 80 percent of U.S. adults cannot afford it, making Medicaid the primary option. To qualify, however, typically an individual must first demonstrate they have no assets. If a person doesn't have enough assets to pay for care themselves but has too much to qualify for Medicaid, they must spend all their assets, including selling their house and depleting all savings and retirement funds until they are considered impoverished. This "spending down" must occur at least five years before attempting to qualify for Medicaid (National Council on Aging, 2023; Ng et al., 2010; Potter & Bowblis, 2021).

Apart from the low level of income needed to qualify for support, there are other centers with Medicaid. For example, not all long-term care facilities accept it. Also, facilities that do accept Medicaid generally operate on

a much smaller per-person budget than more expensive options, meaning they have fewer amenities. Research suggests that nursing homes with a high percentage of Medicaid-qualifying residents also score lower on overall quality than those serving primarily residents with private insurance. Medicaid-accepting facilities are much more likely to serve a higher percentage of people of color and to be located in low-income neighborhoods. Research identifying differences in quality of care based on SES, race, and ethnicity suggests that these discrepancies have been increasing over time (Konetzka et al., 2021).

LINK TO LEARNING

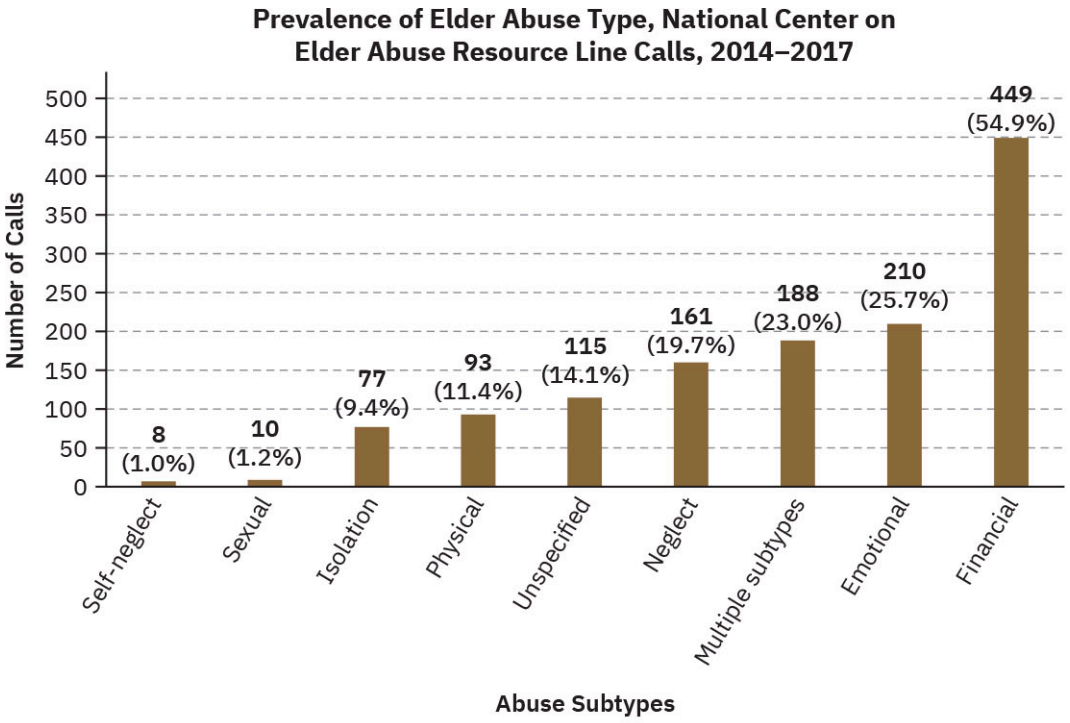
This care provider comparison tool from Medicare (https://openstax.org/r/104caretool) allows you to search different types of care providers to see how they compare against each other. After choosing a service type and entering a location, use the "compare" feature to see how providers rate on factors such as health inspections and number of beds, and whether they take Medicaid.

The financial aspects of nursing home care can vary considerably among countries along dimensions such as how the care is financed, how much of the country's gross domestic product (GDP) is spent on long-term care costs, whether people must meet a certain income threshold to qualify for government assistance, and what percentage of total costs is paid for out of pocket by the resident or their family. The Netherlands, where eligibility for support is not based on income, spends four times as much of its GDP on health care as the United States does, and its residents pay less than half as much out of pocket. In Japan, all adults over age forty years are required to purchase long-term care insurance. While the United Kingdom and the United States both have income requirements to qualify for government assistance with health-care costs, the level to qualify is fifteen times higher in the United States as compared with the United Kingdom (Gruber & McCarry, 2023; Lee et al., 2023; Rau, 2023). Overall, these data suggest that nursing homes and other long-term care are often paid for with a complicated combination of government assistance, private and public insurance, and out-of-pocket costs.

While aging in place is desirable for many reasons, safety is an important consideration with this option. Many houses don't include accessibility features, and a person who starts needing help transferring on and off the toilet and can't afford to install grab bars risks falling. This also produces safety concerns for informal caregivers, who may not have been trained in safe lifting procedures and could injure themselves while helping the care recipient.

An important concern in these types of living environments is **elder abuse**, which is the mistreatment or neglect of an older adult. It is not an uncommon problem; one in ten older adults in the United States is believed to be a victim of elder abuse at some point in their lives (National Council on Aging, 2024). Global data across twenty-eight countries indicate that one in six older adults worldwide experienced some form of abuse within the past year (World Health Organization, 2024).

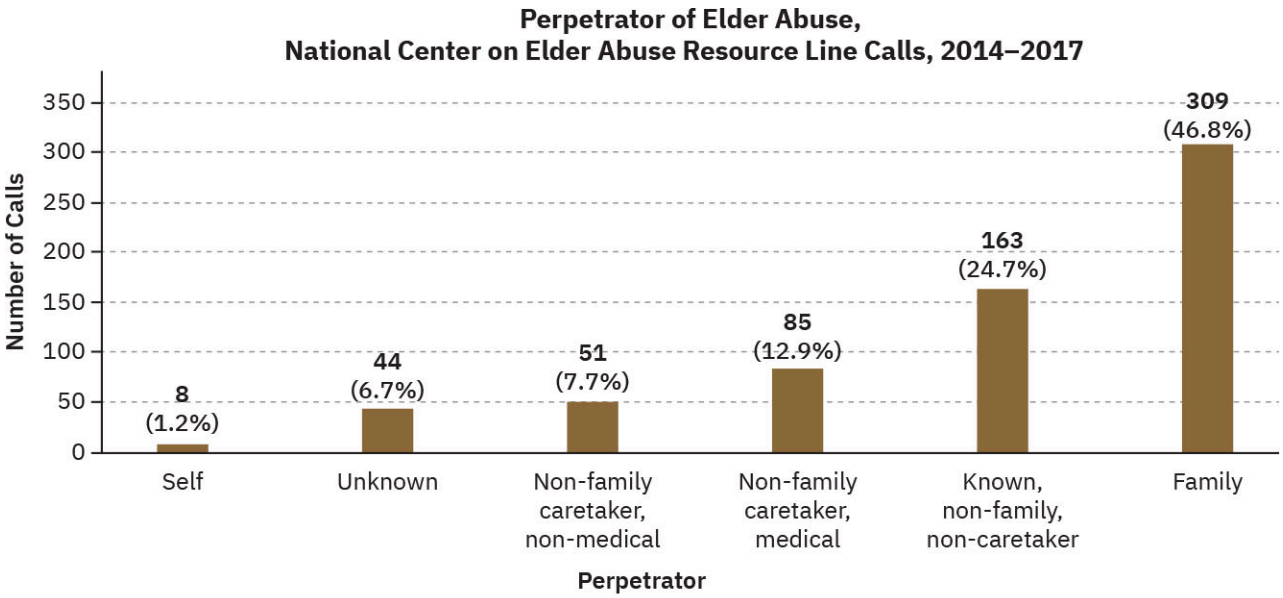
Elder abuse can take many forms, including the physical, sexual, and emotional abuse and neglect seen in other populations. Other forms are more common among this older age group. For example, financial abuse occurs when people take money from an older adult without their knowledge. This can happen when family members exploit their relatives' financial resources or if professionals overcharge for services. Financial abuse is thought to be the most common form of elder abuse (Figure 16.19) (Weissberger et al., 2019).



Source: Weissberger, G., et al. (2019). Elder abuse characteristics based on calls to the National Center on Elder Abuse Resource Line. *Southern Gerontological Society, 39*(10), 1078–1087.

FIGURE 16.19 Financial elder abuse is by far the most common type of elder abuse. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

Elder abuse in institutional settings such as nursing homes tends to get a lot of attention, but a recent study examining nearly 2,000 reported cases revealed that family members and friends/acquaintances were the most common perpetrators, accounting for 47 and 25 percent of cases, respectively (Figure 16.20) (Weissberger et al., 2019). Informal caregivers often have no training in managing the emotional or physical aspects of caregiving and have an increased risk of social isolation and distress caused by caregiving, meaning they may perform their caregiving duties with little supervision or support and thus be at greater risk for engaging in abusive behavior. Generally, vulnerable older adults, such as those with poor health and those dependent on the perpetrator for care and assistance, are more likely to experience abuse. Caregivers who are financially dependent on the older adult or report psychological problems such as depression and burnout are more likely to perpetrate abuse (Storey, 2020).



Source: Weissberger, G., et al. (2019). Elder abuse characteristics based on calls to the National Center on Elder Abuse Resource Line. *Southern Gerontological Society, 39*(10), 1078–1087.

FIGURE 16.20 Contrary to popular belief, perpetrators of elder abuse are more likely to be family members and friends than health-care workers. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The CDC and other resources indicate elder abuse can be prevented through improving our understanding of the challenges of aging, being aware of signs of abuse and how to report it, and checking in on older loved ones through regular visits (CDC, 2024). Additionally, if you are helping a loved one choose a caregiving facility, look for facilities that have educated staff, low turnover, opportunities for continued independence of residents, and clear care and kindness for residents (Maryville, 2024). If caregiving is provided at home, ensure that those providing care are provided with the social and emotional support they need to reduce caregiver stress and provide them with financial and tangible resources to provided adequate care such as education and training on the needs of the person under their care (APA, 2024).

LINK TO LEARNING

If you or someone you know is experiencing elder abuse, you can find reporting resources through the National Center on Elder Abuse (https://openstax.org/r/104NCEA) website or reach out to Eldercare Locator (https://openstax.org/r/104EldercareLoc) for help. Call 1-800-677-1116 to be referred to your local agency. You can also find resources in your community for older adults and their families through Eldercare Locator.

LINK TO LEARNING

Take a look at these tips on preventing elder abuse and neglect (https://openstax.org/r/104PrvntEldAbus) to learn more.

References

AARP. (2021, November 18). AARP survey shows 8 in 10 older adults want to age in their homes, while the number and needs of households headed by older adults grow dramatically. AARP Press Room. https://press.aarp.org/2021-11-18-AARP-Survey-Shows-8-in-10-Older-Adults-Want-to-Age-in-Their-Homes-While-Number-and-Needs-of-Households-Headed-Older-Adults-Grow-Dramatically#:~:text=WASHINGTON%E2%80%94AARP%27s%20new%202021%20Home,do%20so%20safely%20and%20independently

Ahn, M., Kwon, H. J., & Kang, J. (2017). Supporting aging-in-place well: Findings from a cluster analysis of the reasons for aging-in-place and perceptions of well-being. *Journal of Applied Gerontology, 39*(1), 3–15. https://doi.org/10.1177/0733464817748779

American Psychological Association. (2024, July 8). *Elder abuse: How to spot warning signs, get help, and report mistreatment.* https://www.apa.org/topics/aging-older-adults/elder-abuse

Arentshorst, M. E., Kloet, R. R., & Peine, A. (2019). Intergenerational housing: The case of Humanitas Netherlands. *Journal of Housing for the Elderly, 33*(3), 244–256. https://doi.org/10.1080/02763893.2018.1561592

Avent, E. S., Rath, L., Meyer, K., Benton, D., & Nash, P. (2019). Supporting family caregivers: How does relationship strain occur in caregiving dyads? A qualitative study. *Innovation in Aging, 3*(Issue Supplement 1), 289. https://doi.org/10.1093/geroni/igz038.1066

Beck, A. F. (2019). What is co-housing? Developing a conceptual framework from the studies of Danish intergenerational co-housing. *Housing, Theory and Society, 37*(1), 40–64. https://doi.org/10.1080/14036096.2019.1633398
Bekhet, A. K., Zauszniewski, J. A., & Nakhla, W. E. (2009). Reasons for relocation to retirement communities. *Western Journal of Nursing Research*, *31*(4), 462–479. https://doi.org/10.1177/0193945909332009
Bercovitz, A., Moss, A. J., Sengupta, M., Park-Lee, E., Jones, A. L., & Harris-Kojetin, L. (2011). An overview of home health aides: United States, 2007. *National Health Statistics Report*, *34*, 1–31. https://pubmed.ncbi.nlm.nih.gov/21688727
Bom, J., Bakx, P., van Doorslaer, E., Gørtz, M., & Skinner, J. (2023). What explains different rates of nursing home admissions? Comparing the United States to Denmark and the Netherlands. *The Journal of the Economics of Ageing, 25*, 100456. https://doi.org/10.1016/j.jeoa.2023.100456
Centers for Disease Control and Prevention. (2024, May 16). *About abuse of older persons*. U.S. Department of Health and Human Services. https://www.cdc.gov/elder-abuse/about/index.html#cdc_behavioral_basics_prevention-prevention
Chen, Y., Bouferguene, A., Shirgaokar, M., & Al-Hussein, M. (2020). Spatial analysis framework for age-restricted communities integrating spatial distribution and accessibility evaluation. *Journal of Urban Planning and Development*, *146*(1). https://doi.org/10.1061/(ASCE)UP.1943-5444.0000537
Chum, K., Fitzhenry, G., Robinson, K., Murphy, M. B., Phan, D., Alvarez, J., Hand, C., Rudman, D. L., & McGrath, C. (2022). Examining community-based housing models to support aging in place: A scoping review. *Gerontologist*, *62*(3), e178–e192. https://doi.org/10.1093/geront/gnaa142
Cohen-Mansfield, J., Lipson, S., Brenneman, K. S., & Pawlson, L. G. (2001). Health status of participants of adult day care centers. *Journal of Health and Social Policy*, *14*(2), 71–89. https://doi.org/10.1300/j045v14n02_05
Committee on Population, & National Academies of Sciences, Engineering, and Medicine. (2015). Strengthening the Scientific Foundation for Policymaking to meet the challenges of aging in Latin America and the Caribbean: Summary of a Workshop. National Academies Press. https://pubmed.ncbi.nlm.nih.gov/26512392/
del-Pino-Casado, R., Priego-Cubero, E., López-Martínez, C., & Orgeta, V. (2021). Subjective caregiver burden and anxiety in informal caregivers: A systematic review and meta-analysis. *PLOS ONE, 16*(3), e0247143. https://doi.org/10.1371/journal.pone.0247143
Dyer, S. M., Valeri, M., Arora, N., Tilden, D., & Crotty, M. (2020). Is Australia over-reliant on residential aged care to support our older population? *Medical Journal of Australia*, *213*(4), 156. https://doi.org/10.5694/mja2.50670
Fang, K. Y., Maeder, A. J., & Bjering, H. (2016). Current trends in electronic medication reminders for self care. *Studies in Health Technology and Informatics*, *231*, 31–41. https://pubmed.ncbi.nlm.nih.gov/27782014
Gruber, J., & McGarry, K. (2023, November). Long-term care around the world. National Bureau of Economic Research. https://www.nber.org/books-and-chapters/long-term-care-around-world
Haley, W. E., Roth, D. L., Sheehan, O. C., Rhodes, J. D., Huang, J., Blinka, M. D., & Howard, V. J. (2020). Effects of transitions to family caregiving on well-being: A longitudinal population-based study. *Journal of the American Geriatrics Society, 68*(12), 2839–2846. https://doi.org/10.1111/jgs.16778
Hallstrom, L. (2023, September 13). Total and percentage of elderly in nursing homes: 2023 data. https://www.aplaceformom.com/senior-living-data/articles/elderly-nursing-home-population
Ho, S. C., Chan, A. C. M., Woo, J., Chong, P. Y. Y., & Sham, A. (2009). Impact of caregiving on health and quality of life: A comparative population-based study of caregivers for elderly persons and noncaregivers. *The Journals of Gerontology, 64A*(8), 873–879. https://doi.org/10.1093/gerona/glp034
Kaldy, J., Esposito, L., & Howley, E. K. (2024, July 17). Nursing home costs and how to pay. *U.S. News & World Report*. https://health.usnews.com/best-nursing-homes/articles/how-to-pay-for-nursing-home-costs
Kalideen, L., van Wyk, J. M., & Govender, P. (2022). Demographic and clinical profiles of residents in long-term care facilities in South Africa: A cross-sectional survey. *African Journal of Primary Health Care & Family Medicine*, *14*(1). https://doi.org/10.4102/phcfm.v14i1.3131
Kasper, J. D., Freedman, V. A., Spillman, B. C., & Wolff, J. L. (2015). The disproportionate impact of dementia on family and unpaid caregiving to older adults. *Health Affairs*, *34*(10), 1642–1649. https://doi.org/10.1377/hlthaff.2015.0536
Kasper, J. D., Wolff, J. L., & Skehan, M. (2018). Care arrangements of older adults: What they prefer, what they have, and implications for quality of life. *Gerontologist 59*(5), 845–855. https://doi.org/10.1093/geront/gny127
Katz, S. A. (1983). Assessing self-maintenance: Activities of daily living, mobility, and instrumental activities of daily living. *Journal of the American Geriatrics Society*, *31*(12), 721–727. https://doi.org/10.1111/j.1532-5415.1983.tb03391.x
Kim, A., & Woo, K. M. (2022). Gender differences in the relationship between informal caregiving and subjective health: The mediating role of health promoting behaviors. *BMC Public Health, 22*. https://doi.org/10.1186/s12889-022-12612-3
Konetzka, R. T., Yan, K., & Werner, R. M. (2021). Two decades of nursing home compare: What have we learned? *Medical Care Research and Review, 78*(4), 295–310. https://doi.org/10.1177/1077558720931652
Labit, A., & Dubost, N. (2016). Housing and ageing in France and Germany: The intergenerational solution. *Housing, Care and Support, 19*(2), 45-54. https://doi.org/10.1108/HCS-08-2016-0007
Lawton, M. P., & Brody, E. M. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. *Gerontologist*, *9*(3, Part 1), 179–186. https://doi.org/10.1093/geront/9.3_part_1.179
Lee, S.-H., Chon, Y., & Kim, Y.-Y. (2023). Comparative analysis of long-term care in OECD countries: Focusing on long-term care financing type. *Healthcare, 11*(2), 206. https://doi.org/10.3390/healthcare11020206
Lee, Y., & Tang, F. (2015). More caregiving, less working: Caregiving roles and gender difference. *Journal of Applied Gerontology*, *34*(4), 465–483. https://doi.org/10.1177/0733464813508649
Lim, S., Mohaimin, S., Min, D., Roberts, T., Sohn, Y.-J., Wong, J., Sivanesathurai, R., Kwon, S. C., & Trinh-Shevrin, C. (2020). Alzheimer's disease and its related dementias among Asian Americans, Native Hawaiians, and Pacific Islanders: A scoping review. *Journal of Alzheimer's Disease, 77*(2), 523–537. https://doi.org/10.3233/JAD-200509
Liu, C., Badana, A. N. S., Burgdorf, J., Fabius, C. D., Roth, D. L., & Haley, W. E. (2021). Systematic review and meta-analysis of racial and ethnic differences in dementia caregivers' well-being. *The Gerontologist, 61*(5), e228–e243. https://doi.org/10.1093/geront/gnaa028
Marek, K. D., Popejoy, L., Petroski, G., Mehr, D. R., Rantz, M., & Lin, W.-C. (2005). Clinical outcomes of aging in place. *Nursing Research*, *54*(3), 202–211. https://doi.org/10.1097/00006199-200505000-00008
Maryville University. (2023, September 4). *A caregiver's guide to understanding, recognizing, and preventing elder abuse*. https://nursing.maryville.edu/blog/caregivers-guide-to-understanding-recognizing-and-preventing-elder-abuse.html
Medicare.gov (n.d.). *How to get prescription drug coverage*. https://www.medicare.gov/drug-coverage-part-d/how-to-get-prescription-drug-coverage
Nadash, P., Tell, E. J., & Jansen, T. (2023). What do family caregivers want? Payment for providing 2care. *Journal of Aging & Social Policy, 36*(4), 547–561. https://doi.org/10.1080/08959420.2022.2127599
National Council on Aging. (2024, July 8). *Get the facts on elder abuse*. https://www.ncoa.org/article/get-the-facts-on-elder-abuse
National Council on Aging. (2023, April 19). *80% of older Americans cannot pay for long-term care or withstand a financial shock, new study shows*. https://ncoa.org/article/80-percent-of-older-americans-cannot-pay-for-long-term-care-or-withstand-a-financial-shock-new-study-shows
National Institute on Aging. (2023, October 12). *Long-term care facilities: Assisted living, nursing homes, and other residential care*. https://www.nia.nih.gov/health/residential-facilities-assisted-living-and-nursing-homes
Ng, T., Harrington, C., & Kitchener, M. J. (2010). Medicare and Medicaid in long-term care. *Health Affairs*, *29*(1), 22–28. https://doi.org/10.1377/hlthaff.2009.0494
O'Brien, K. L., Liggett, A., Ramirez-Zohfeld, V., Sunkara, P., & Lindquist, L. A. (2019). Voice-controlled intelligent personal assistants to support aging in place. *Journal of the American Geriatrics Society*, *68*(1), 176–179. https://doi.org/10.1111/jgs.16217
Ollevier, A., Aguiar, G., Palomino, M. A., & Simpelaere, I. S. (2020). How can technology support ageing in place in healthy older adults? A systematic review. *Public Health Reviews*, *41*, 26. https://doi.org/10.1186/s40985-020-00143-4
Pashmdarfard, M., & Azad, A. (2020). Assessment tools to evaluate activities of daily living (ADL) and instrumental activities of daily living (IADL) in older adults: A systematic review. *Medical Journal of the Islamic Republic of Iran, 34*(1), 224–239. https://doi.org/10.47176/mjiri.34.33
Perkins, M., Howard, V. J., Wadley, V. G., Crowe, M., Safford, M. M., Haley, W. E., Howard, G., & Roth, D. (2012). Caregiving strain and all-cause mortality: Evidence from the REGARDS study. *Journals of Gerontology Series B*, *68*(4), 504–512. https://doi.org/10.1093/geronb/gbs084
Pinquart, M., & Sörensen, S. (2006). Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis. *The Journals of Gerontology Series B*, *61*(1), 33–45. https://doi.org/10.1093/geronb/61.1.p33
Potter, A. J., & Bowblis, J. R. (2021). Nursing home care under Medicaid managed long-term services and supports. *Health Services Research*, *56*(6), 1179–1189. https://doi.org/10.1111/1475-6773.13701
Rau, J. (2023, Nov. 14). What long-term care looks like around the world. *The New York Times*. https://www.nytimes.com/2023/11/14/health/long-term-care-insurance-global.html
Robledo, L. M. G., Cano-Gutiérrez, C. A., & García, E. V. (2022). Healthcare for older people in Central and South America. *Age And Ageing*, *51*(5), afac017. https://doi.org/10.1093/ageing/afac017
Schulz, R., Beach, S. R., Czaja, S. J., Martire, L. M., & Monin, J. K. (2020). Family caregiving for older adults. *Annual Review of Psychology, 71*, 635–659. https://doi.org/10.1146/annurev-psych-010419-050754
Sengupta, M., Lendon, J. P., Caffrey, C., Melekin, A., & Singh, P. (2022). Post-acute and long-term care providers and services users in the United States, 2017–2018. National Center for Health Statistics. *Vital Health Statistics, 3*(47). https://dx.doi.org/10.15620/cdc:115346.
Shuman, T. (2024, July 8). Independent living costs in 2024. Seniorliving.org. https://www.seniorliving.org/independent-living/costs/
Storey, J. E. (2020). Risk factors for elder abuse and neglect: A review of the literature. *Aggression and Violent Behavior*, *50*, 101339. https://doi.org/10.1016/

j.avb.2019.101339
Tuohy, D., Kingston, L., Carey, E., Graham, M., Dore, L., & Doody, O. (2023). A scoping review on the psychosocial interventions used in day care service for people living with dementia. *PLOS ONE*, *18*(12), e0295507. https://doi.org/10.1371/journal.pone.0295507
United States Department of Housing and Urban Development. (n.d.). *Congregate Housing Services Program (CHSP)*. https://www.hud.gov/program_offices/housing/mfh/progdesc/chsp
Velkoff, V. A., & Kowal, P. R. (2007). Aging in sub-Saharan Africa: The changing demography of the region. *Aging in sub-Saharan Africa: Recommendations for furthering research*, 55–91. https://www.ncbi.nlm.nih.gov/books/NBK20301/
Vitaliano, P. P., Young, H. M., & Zhang, J. (2004). Is caregiving a risk factor for illness? *Current Directions in Psychological Science*, *13*(1), 13–16. https://doi.org/10.1111/j.0963-7214.2004.01301004.x
Weissberger, G. H., Goodman, M. C., Mosqueda, L., Schoen, J., Nguyen, A. L., Wilber, K. H., Gassoumis, Z. D., Nguyen, C. P., & Han, S. D. (2019). Elder abuse characteristics based on calls to the National Center on Elder Abuse Resource Line. *Journal of Applied Gerontology*, *39*(10), 1078–1087. https://doi.org/10.1177/0733464819865685
World Health Organization. (2024, June 15). Abuse of older people. https://www.who.int/news-room/fact-sheets/detail/abuse-of-older-people
Zallman, L., Finnegan, K. E., Himmelstein, D. U., Touw, S., & Woolhandler, S. (2019). Care for America's elderly and disabled people relies on immigrant labor. *Health Affairs (Project Hope)*, *38*(6), 919–926. https://doi.org/10.1377/hlthaff.2018.05514
Zawaly, K., Ripat, J., Guse, L., Katz, A., Edwards, J., & Sibley, K. M. (2022). Re-braiding the strands of life through community rehabilitation, home care, and informal support: A longitudinal collective case study. *Canadian Journal on Aging*, *42*(1), 80–91. https://doi.org/10.1017/s0714980822000137

16.5 Successful Social and Emotional Aging in Late Adulthood

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify behaviors and traits associated with successful emotional aging
- Identify behaviors and traits associated with successful social aging
- Describe the selection, optimization, and compensation theory

Randall is ninety-two years old and enjoying life. In the last few years, though, he's noticed declines in his physical ability. Most significantly, he has difficulty moving around on his own and needs more help from others than he would like in order to live at home. Since his retirement, however, he's had time to enjoy and nurture his important relationships and day-to-day pleasures. He appreciates the experiences he's had in life and the things he's still able to do, and he starts each day with a sense of optimism and gratitude.

What happens as someone gets nearer to the end of life? How do people maintain good psychosocial well-being when physical functioning starts to decline? Research suggests that social activity and positive emotional states remain possible for those who have an optimistic perception of aging, are spiritually content, have a purpose in life, and have access to good social support (Kim & Park, 2017).

Successful Emotional Aging

Successful emotional aging is the norm, not the exception. Research suggests that life satisfaction tends to be relatively stable and either is maintained or increases as people age (Frijters & Beatton, 2012; Gana et al., 2013; Kim et al., 2021; Schilling, 2006). Happiness follows a similar pattern, increasing throughout the later part of middle adulthood and the earlier part of older age, although some research indicates it declines in the later part of older adulthood (Becker & Trautmann, 2022).

However, happiness and life satisfaction don't happen by themselves. Adequate social support, regular exercise, and maintenance of good physical functioning are associated with more positive emotional changes in aging. Older adults who struggle financially, take on a caregiving role, have cognitive and physical declines, and experience depression, loneliness, or grief are less likely to enjoy these positive outcomes (Alexopoulos, 2005; Işik et al., 2020; Miller et al., 2019). Although the causal nature of these connections is hard to study experimentally, addressing financial, physical, or psychosocial needs is likely to benefit older adults.

Resilience and gratitude can be valuable tools in older age. Resilience is the ability to work toward positive outcomes when faced with challenges or adversity (Bolton et al., 2016). One factor that may contribute to resilience is our **locus of control**, the extent to which we believe we have control over our life and its outcomes. Locus of control can be either internal or external. People with an *external* locus of control generally believe the things that happen to them are out of their control, due to factors like luck, fate, or the actions of others. Having an external locus of control is often associated with low effort, a lack of perseverance, and negative outcomes such as depression and poor health choices. In contrast, having a strong *internal* locus of control, meaning you believe you are in control of your circumstances, has long been associated with a variety of positive outcomes. Individuals with this trait are more likely to put in more effort and persevere in the face of challenges. They also tend to exhibit better mental health (Gore et al., 2016; Song & Yang, 2015; Sujadi, 2020).

Locus of control has been demonstrated across a variety of contexts, such as schools and workplaces, and in different age groups including older adults. In a classic experiment, Langer and Rodin (1976) manipulated the locus of control for some new nursing home residents. The control group was informed the staff would be primarily responsible for their care and making decisions for them, while the experimental group was told they had more responsibility and choice. After a period of time, residents in the experimental group were more alert, were more likely to engage in activities, and had a stronger sense of well-being.

Another positive mental state is gratitude, appreciation for things that are meaningful or important to you (Sansone & Sansone, 2010) (Figure 16.21). Older adults display more gratitude than middle-aged and younger adults, and this trait has been associated with many positive outcomes such as a stronger sense of well-being (Chopik et al., 2019). Experimental evidence indicates that gratitude may actually cause some of these positive outcomes. One study found that assigning older adults to write daily about what they were grateful for resulted in less loneliness, better perceived health, and improved well-being (Bartlett & Arpin, 2019). Other interventions incorporating gratitude, such as writing thank you notes to friends and family, have been found to increase life satisfaction and happiness while decreasing depression (Ho et al., 2014).

FIGURE 16.21 Allowing yourself to be grateful is associated with many positive outcomes. (credit: modification of work “Trail overlook” by Justin Katigbak/Disabled and Here, CC BY 4.0)

LIFE HACKS

Gratitude

The benefits of gratitude can be experienced among all age groups. Gratitude among college students has been significantly related to increased happiness (Safaria, 2014), better perceived social support, and lower rates of hopelessness, depression, substance abuse, and risk of suicide (Kaniuka et al., 2020). Gratitude has even been found to benefit academic success in college. Higher levels have been associated with more engagement in college life, more social activity in college, more persistence, higher GPAs, and fewer failed courses (Mofidi et al., 2015).

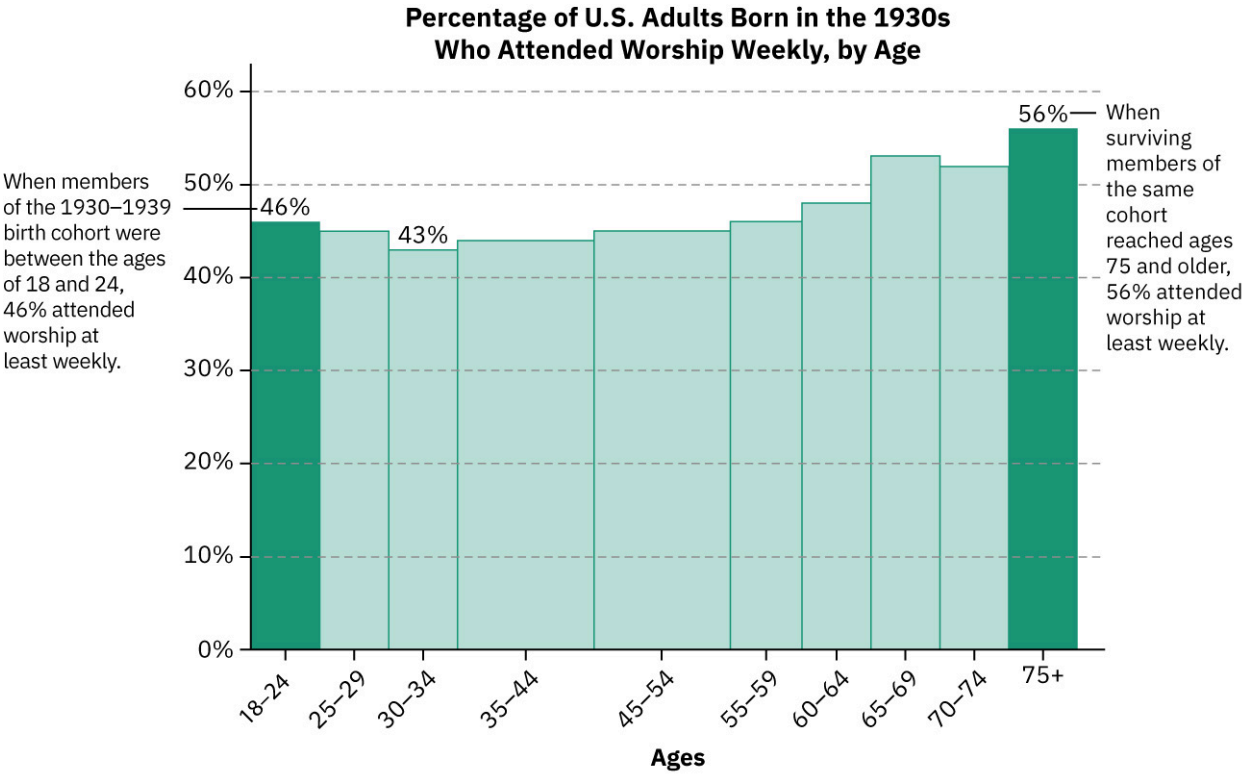
The next time you find yourself in a “glass half-empty” kind of mood or you feel like everything’s going wrong, take some time to reflect on and take note of the things you’re grateful for as well as the things you appreciate in life. You could do this by writing these things down, drawing them, taking photos, making an art project, or recording them in some other way that feels right for you. Research shows that this brief exercise can be beneficial in a lot of ways.

Successful Social Aging

Recall from the discussion of socioemotional selectivity theory that while social networks may shrink in later years, the reason is a selective focus on more meaningful relationships that are important in achieving emotional goals (Figure 16.22).

FIGURE 16.22 Social relationships tend to maintain a person's positive outlook in older age. (credit: modification of work "Portuguese retired people in theirs usual meeting point" by Pedro Ribeiro Simões/Flickr, CC BY 2.0)

Family and friends are important resources, but older adults also frequently benefit from social interaction and social support they find by participating in religious activities (Hayward & Krause, 2014). Such participation tends to increase as people get older (Figure 16.23), likely due to a combination of factors such as people's searching for meaning near the end of life and having more time to commit after retirement (Mitchell, 2022). Those who regularly attend religious services are more socially connected and spend more time interacting with others than those who don't, even after controlling for other variables such as extraversion and physical health (Hastings, 2016; Rote et al., 2013). In other words, the positive correlation between attending religious services and social interactions isn't because the people attending religious services are healthier and more extraverted than people who don't attend religious services.



Source: Pew Research Center. (2018). The age gap in religion around the world.

FIGURE 16.23 The percentage of U.S. adults who attend religious services increases with age. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

However, increasing numbers of adults in many countries such as China, Canada, and Estonia are identifying as either nonreligious or not belonging to any specific religion (Hout, 2017; Woodhead, 2017). While most are emerging adults, not having a religious identity at a younger age often remains constant into older adulthood (Hout, 2017), so this trend is likely to persist as today's cohort of young adults ages. This doesn't mean nonreligious or nondenominational adults are lonely and distressed, though. In fact, some research suggests that the social dimension of religious participation is more important than the religious dimension, and that some of the same benefits associated with participation in religious activities are also enjoyed by people who participate in other activities such as sports and artistic endeavors (Lim & Putnam, 2010; Wheatley & Bickerton, 2019).

Theories and Ideas about Successful Aging

Even those who age successfully will eventually experience declines. But the fact that fewer than 5 percent of older adults live in long-term care facilities suggests that most maintain a high level of functioning despite these effects (Figure 16.24).

FIGURE 16.24 Older adults who are physically active are more likely to age successfully, not just physically but in terms of their emotions, social interactions, and cognitive ability as well. (credit: modification of work "Block Party" by Seattle Parks and Recreation/Flickr, CC BY 2.0)

The **selection, optimization, and compensation theory (SOC)**, developed by Paul Baltes and colleagues, states that older adults engage in three activities to maintain their high level of functioning:

- Through selection, older adults become more discriminating in the activities they pursue. Based on their ability, goals, and needs, they may quit some activities that are not meaningful or necessary, allowing them to dedicate more time and resources to the ones they desire to maintain.
- Optimization enhances the activities the person has elected to maintain. Individuals achieve optimization by practicing the activity more, allocating more time to it, or giving it more focused attention.
- Compensation helps to deal with declines or losses. Such efforts include using assistive devices, asking for help, and changing strategies to maintain activities after declines have occurred (Baltes, 1997; Marsiske et al., 1995).

One example (Baltes, 1997) of the SOC theory in action came from a television interview with the internationally acclaimed concert pianist Arthur Rubinstein (Figure 16.25). Rubinstein, then eighty years old and still performing, was asked how he could still play at such a high level. Rubinstein first stated that he performed a smaller number of musical pieces than before, focusing only on those that were emotionally meaningful (selection). He then said he now had more time to devote to rehearsing those selected pieces (optimization). Finally, he noted that his ability to play very fast had declined. To adjust for this, he gradually slowed down before a tempo increase, to make it sound like he was playing much faster than he actually was (compensation).

(a) (b)

FIGURE 16.25 (a) World-renowned pianist Arthur Rubinstein plays in concert in 1906 at age nineteen years, (b) and fifty-six years later in 1962, at age seventy-five years. He lived another twenty years, dying at age ninety-five years. (credit a: modification of work "Arthur Rubinstein 1906" by Library of Congress/Wikimedia Commons, Public Domain; credit b: modification of work "Optreden Arthur Rubinstein in Concertgebouw, Bestanddeelnr" by Nationaal Archief/Wikimedia Commons, CC0 1.0)

The SOC theory provides a compelling explanation for the way older adults can maintain important activities and high levels of functioning, but it may have its limits. When people approach age ninety years and beyond, age-related declines in health and functional ability become more prevalent and harder to manage (Baltes & Smith, 2003). Thus, researchers have called for efforts to develop psychological interventions that can help older adults develop the perspective and understanding to accept and deal with these losses (Makwana, 2022).

One such intervention is the Mental Fitness Program for Positive Aging (Bar-Tur, 2021). This program uses concepts of positive psychology to improve the quality of life among older adults. It includes activities such as acknowledging current strengths, increasing engagement in social relationships, considering goals for the remainder of life, reflecting on past accomplishments, and practicing gratitude, mindfulness, and kindness. The goal is to help older adults achieve a healthy perspective related to aging in general and their own aging in particular. Findings suggest that the activities in this program improved participants' well-being despite significant declines in health and/or functional ability (Bar-Tur, 2021), consistent with the notion that successful aging is a multifaceted concept.

Actively engaging in life is another significant factor in successful aging, identified by Kim and Park (2017). Active engagement includes doing paid or unpaid work, being productive, and being socially connected. Here we start to see how different aspects of successful aging intertwine. If you consider successful physical and cognitive aging described in Chapter 15 Physical and Cognitive Development in Late Adulthood (Age 60 and Beyond) along with this chapter's discussion of successful emotional and social aging, a trend clearly emerges. You can consistently predict the likelihood that someone is successfully aging in one domain by asking whether they are successfully aging in others (Table 16.1).

Domain	Subdomain	Predictors of Successful Aging
Successful physical aging	Cognitive	Cognitive decline is related to declines in physical ability (Jylhävä et al., 2017).
	Emotional	Poor emotional states such as depression are a risk factor for both physical disability and mortality (Zenebe et al., 2021).
	Social	Isolation and lack of social interaction have been linked to poorer physical activity and health (Sepúlveda-Loyola et al., 2020).
Successful cognitive aging	Physical	Interventions that increase physical exercise result in improved scores on memory and other cognitive tasks (Carta et al. 2021).
	Emotional	Older adults free of depression tend to experience less cognitive decline than older adults with depression (Formánek et al., 2020).
	Social	Interventions that increased social interaction resulted in improved overall cognitive ability (Whitty et al., 2020).
Successful emotional aging	Physical	Poor emotional states, such as depression, can be a consequence of chronic physical health problems (Gold et al., 2020).
	Cognitive	Older adults experiencing cognitive decline including dementia are at increased risk of emotional problems such as depression (Brzezińska et al., 2020).
	Social	High-quality social interactions and social support are predictive of more positive feelings about your life (Diener et al., 2018).
Successful social aging	Physical	Physical activity and ability in older age can predict social network size (McPhee et al., 2016).
	Cognitive	Cognitive decline and dementia are related to decreased social interaction (Kuiper et al., 2015).
	Emotional	Individuals experiencing poor emotional states such as depression can become more isolated over time and tend to disengage socially (Elmer & Stadtfeld, 2020).

TABLE 16.1 Predictors of Successful Aging

Although different aspects of successful aging are interconnected, research demonstrates different tendencies across domains. For example, a healthy lifestyle can help maintain physical functioning and health well into late adulthood, though not forever. And while some types of cognitive declines are likely, normative age-related declines don't interfere with successful cognitive aging. Taken together, results show that successful aging is the norm for cognitive, social, and emotional abilities, particularly if the adage "use it or lose it" is applied. In general, older adults who age successfully tend to "use it" by maintaining activity across all domains. They pursue cognitively challenging tasks. They establish and maintain relationships at a high level. They are physically active. They also pursue activities meant to result in a more emotionally positive state (Maula et al. 2019; Stine-Morrow & Manavbasi, 2022).

References

Alexopoulos, G. S. (2005). Depression in the elderly. *The Lancet, 365*(9475), 1961–1970. https://doi.org/10.1016/s0140-6736(05)66665-2
Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory. *American Psychologist, 52*(4), 366–380. https://doi.org/10.1037/0003-066x.52.4.366
Baltes, P. B., & Smith, J. (2003). New frontiers in the future of aging: From successful aging of the young old to the dilemmas of the fourth age. *Gerontology, 49*(2), 123–135. https://doi.org/10.1159/000067946
Bartlett, M. Y., & Arpin, S. N. (2019). Gratitude and loneliness: Enhancing health and well-being in older adults. *Research on Aging, 41*(8), 772–793. https://doi.org/

10.1177/0164027519845354
Bar-Tur, L. (2021). Fostering well-being in the elderly: Translating theories on positive aging to practical approaches. *Frontiers in Medicine, 8*. https://doi.org/10.3389/fmed.2021.517226
Becker, C. K., & Trautmann, S. T. (2022). Does happiness increase in old age? Longitudinal evidence from 20 European countries. *Journal of Happiness Studies*, *23*, 3625–3654. https://doi.org/10.1007/s10902-022-00569-4
Bolton, K. W., Praetorius, R. T., & Smith-Osborne, A. (2016). Resilience protective factors in an older adult population: A qualitative interpretive meta-synthesis. *Social Work Research*, *40*(3), 171–182. https://doi.org/10.1093/swr/svw008
Brzezińska, A., Bourke, J., Rivera-Hernández, R., Tsolaki, M., Woźniak, J., & Kaźmierski, J. (2020). Depression in dementia or dementia in depression? Systematic review of studies and hypotheses. *Current Alzheimer Research*, *17*(1), 16–28. https://doi.org/10.2174/15672050mta0qntuny
Carta, M. G., Cossu, G., Pintus, E., Zaccheddu, R., Callia, O., Conti, G., Pintus, M. C., González, C. I. A., Massidda, M. V., Mura, G., Sardu, C., Contu, P., Minerba, L., Demontis, R., Pau, M., Finco, G., Cocco, E., Penna, M. P., Orr, G., . . . Preti, A. (2021). Moderate exercise improves cognitive function in healthy elderly people: Results of a randomized controlled trial. *Clinical Practice & Epidemiology in Mental Health*, *17*(1), 75–80. https://doi.org/10.2174/1745017902117010075
Chopik, W. J., Newton, N. J., Ryan, L. H., Kashdan, T. B., & Jarden, A. J. (2019). Gratitude across the life span: Age differences and links to subjective well-being. *The Journal of Positive Psychology*, *14*(3), 292–302. https://doi.org/10.1080/17439760.2017.1414296
Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour*, *2*, 253–260. https://doi.org/10.1038/s41562-018-0307-6
Elmer, T., & Stadtfeld, C. (2020). Depressive symptoms are associated with social isolation in face-to-face interaction networks. *Scientific Reports*, *10*, *1444*. https://doi.org/10.1038/s41598-020-58297-9
Formánek, T., Csajbók, Z., Wolfová, K., Kučera, M., Tom, S. E., Aarsland, D., & Čermaková, P. (2020). Trajectories of depressive symptoms and associated patterns of cognitive decline. *Scientific Reports*, *10*, 20888. https://doi.org/10.1038/s41598-020-77866-6
Frijters, P., & Beatton, T. (2012). The mystery of the U-shaped relationship between happiness and age. *Journal of Economic Behavior and Organization*, *82*(2–3), 525–542. https://doi.org/10.1016/j.jebo.2012.03.008
Gana, K., Bailly, N., Saada, Y., Joulain, M., & Alaphilippe, D. (2013). Does life satisfaction change in old age: Results from an 8-year longitudinal study. *The Journals of Gerontology Series B*, *68*(4), 540–552. https://doi.org/10.1093/geronb/gbs093
Gold, S. M., Köhler-Forsberg, O., Moss-Morris, R., Mehnert, A., Miranda, J. J., Bullinger, M., Steptoe, A., Whooley, M. A., & Otte, C. (2020). Comorbid depression in medical diseases. *Nature Reviews Disease Primers*, *6*, 69. https://doi.org/10.1038/s41572-020-0200-2
Gore, J. S., Griffin, D. P., & McNierney, D. (2016). Does internal or external locus of control have a stronger link to mental and physical health? *Psychological Studies, 61*, 181-196. https://doi.org/10.1007/s12646-016-0361-y
Hastings, O. P. (2016). Not a lonely crowd? Social connectedness, religious service attendance, and the spiritual but not religious. *Social Science Research*, *57*, 63–79. https://doi.org/10.1016/j.ssresearch.2016.01.006
Hayward, R. D. & Krause, N. (2014). Religion, mental health and well-being: Social aspects. In V. Saroglou (Ed.), *Religion, personality, and social behavior* (pp. 255–280). Psychology Press.
Ho, H. C. Y., Yeung, D. Y., & Kwok, S. Y. C. L. (2014). Development and evaluation of the positive psychology intervention for older adults. *The Journal of Positive Psychology, 9*(3), 187–197. https://doi.org/10.1080/17439760.2014.888577
Hout, M. (2017). Religious ambivalence, liminality, and the increase of no religious preference in the United States, 2006–2014. *Journal for the Scientific Study of Religion, 56*(1), 52–63. https://doi.org/10.1111/jssr.12314
Işik, K., Başoğul, C., & Yildirim, H. (2020). The relationship between perceived loneliness and depression in the elderly and influencing factors. *Perspectives in Psychiatric Care*, *57*(3), 351–357. https://doi.org/10.1111/ppc.12572
Jylhävä, J., Pedersen, N. L., & Hägg, S. (2017). Biological age predictors. *eBioMedicine*, *21*, 29–36. https://doi.org/10.1016/j.ebiom.2017.03.046
Kaniuka, A. R., Rabon, J. K., Brooks, B. D., Sirois, F. M., Kleiman, E. M., & Hirsch, J. K. (2020). Gratitude and suicide risk among college students: Substantiating the protective benefits of being thankful. *Journal of American College Health*, *69*(6), 660–667. https://doi.org/10.1080/07448481.2019.1705838
Kim, E. S., Delaney, S. W., Tay, L., Chen, Y., Diener, E., & VanderWeele, T. J. (2021). Life satisfaction and subsequent physical, behavioral, and psychosocial health in older adults. *The Milbank Quarterly*, *99*(1), 209–239. https://doi.org/10.1111/1468-0009.12497
Kim, S.-H., & Park, S. (2017). A meta-analysis of the correlates of successful aging in older adults. *Research on Aging, 39*(5), 657–677. https://doi.org/10.1177/0164027516656040
Kuiper, J. S., Zuidersma, M., Voshaar, R. C. O., Zuidema, S. U., van den Heuvel, E. R., Stolk, R. P., & Smidt, N. (2015). Social relationships and risk of dementia: A systematic review and meta-analysis of longitudinal cohort studies. *Ageing Research Reviews*, *22*, 39–57. https://doi.org/10.1016/j.arr.2015.04.006
Langer, E. J., & Rodin, J. (1976). The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology*, *34*(2), 191–198. https://doi.org/10.1037/0022-3514.34.2.191
Lim, C., & Putnam, R. D. (2010). Religion, social networks, and life satisfaction. *American Sociological Review, 75*(6), 914–933. http://www.jstor.org/stable/25782172
Makwana, G. (2022). The growing need of geropsychological intervention in older Adults. *The International Journal of Indian Psychology*, *10*(4), 1–10. https://doi.org/10.25215/1004.060
Marsiske, M., Lang, F. B., Baltes, P. B., & Baltes, M. M. (1995). Selective optimization with compensation: Life-span perspectives on successful human development. In R. A. Dixon & L. Bäckman (Eds.), *Compensating for psychological deficits and declines: Managing losses and promoting gains* (pp. 35–79). Lawrence Erlbaum Associates Inc.
Maula, A., LaFond, N., Orton, E., Iliffe, S., Audsley, S., Vedhara, K., & Kendrick, D. (2019). Use it or lose it: A qualitative study of the maintenance of physical activity in older adults. *BMC Geriatrics*, *19*, 349. https://doi.org/10.1186/s12877-019-1366-x
McPhee, J. S., French, D. P., Jackson, D., Nazroo, J., Pendleton, N., & Degens, H. (2016). Physical activity in older age: Perspectives for healthy ageing and frailty. *Biogerontology*, *17*, 567–580. https://doi.org/10.1007/s10522-016-9641-0
Miller, K. J., Mesagno, C., McLaren, S., Grace, F., Yates, M., & Gomez, R. (2019). Exercise, mood, self-efficacy, and social support as predictors of depressive symptoms in older adults: Direct and interaction effects. *Frontiers in Psychology*, *10*, 2145. https://doi.org/10.3389/fpsyg.2019.02145
Mitchell, T. (2022, April 26). *Religious observance by age and country*. Pew Research Center's Religion & Public Life Project. https://www.pewresearch.org/religion/2018/06/13/why-do-levels-of-religious-observance-vary-by-age-and-country/#:~:text=Research%20has%20shown%20that%20religious,through%20most%20of%20late%20adulthood
Mofidi, T., El-Alayli, A., & Brown, A. A. (2015). Trait gratitude and grateful coping as they relate to college student persistence, success, and integration in school. *Journal of College Student Retention: Research, Theory & Practice*, *16*(3), 325–349. https://doi.org/10.2190/cs.16.3.b
Rote, S., Hill, T. D., & Ellison, C. G. (2013). Religious attendance and loneliness in later life. *The Gerontologist*, *53*(1), 39–50. https://doi.org/10.1093/geront/gns063
Safaria, T. (2014). Forgiveness, gratitude, and happiness among college students. *International Journal of Public Health Science, 3*(4), 241–245. https://doi.org/10.11591/ijphs.v3i4.4698
Sansone, R. A., & Sansone, L. A. (2010). Gratitude and well being: The benefits of appreciation. *Psychiatry*, 7(11), 18–22.
Schilling, O. (2006). Development of life satisfaction in old age: Another view on the "paradox." *Social Indicators Research*, *75*, 241–271. https://doi.org/10.1007/s11205-004-5297-2
Sepúlveda-Loyola, W., Rodríguez-Sánchez, I., Pérez-Rodríguez, P., Ganz, F., Torralba, R., Oliveira, D. V., & Rodríguez-Mañas, L. (2020). Impact of social isolation due to COVID-19 on health in older people: Mental and physical effects and recommendations. *The Journal of Nutrition Health & Aging*, *24*(9), 938–947. https://doi.org/10.1007/s12603-020-1500-7
Song, M. S., & Yang, N. Y. (2015). Impact of knowledge, attitude, and internal health locus of control on performance of hand washing among elders. *Journal of Korean Gerontological Nursing, 17*(3), 175–183. https://doi.org/10.17079/jkgn.2015.17.3.175
Stine-Morrow, E. A. L., & Manavbasi, I. E. (2022). Beyond "use it or lose it": The impact of engagement on cognitive aging. *Annual Review of Developmental Psychology*, *4*(1), 319–352. https://doi.org/10.1146/annurev-devpsych-121020-030017
Sujadi, E. (2020). Locus of control and student achievement. *Indonesian Journal of Counseling and Development, 2*(1), 52–58. https://doi.org/10.32939/ijcd.v2i01.872
Wheatley, D., & Bickerton, C. (2019). Measuring changes in subjective well-being from engagement in the arts, culture and sport. *Journal of Cultural Economics, 43*(3), 421–442. https://www.jstor.org/stable/48698101
Whitty, E., Mansour, H., Aguirre, E., Palomo, M., Charlesworth, G., Ramjee, S., Poppe, M., Brodaty, H., Kales, H. C., Morgan-Trimmer, S., Nyman, S. R., Lang, I., Walters, K., Petersen, I., Wenborn, J., Minihane, A.-M., Ritchie, K., Huntley, J., Walker, Z., & Cooper, C. (2020). Efficacy of lifestyle and psychosocial interventions in reducing cognitive decline in older people: Systematic review. *Ageing Research Reviews*, *62*, 101113. https://doi.org/10.1016/j.arr.2020.101113
Woodhead, L. (2017). The rise of "no religion": Towards an explanation. *Sociology of Religion, 78*(3), 247–262. https://doi.org/10.1093/socrel/srx031
Zenebe, Y., Akele, B., W/Selassie, M., & Necho, M. (2021). Prevalence and determinants of depression among old age: A systematic review and meta-analysis. *Annals of General Psychiatry*, *20*, 55. https://doi.org/10.1186/s12991-021-00375-x

Key Terms

401(k) plan common retirement plan in the United States, in which employers match employees' contributions but individuals are responsible for investing their own retirement account

activity of daily living (ADL) action required to care for yourself, such as feeding yourself, bathing, dressing, using the toilet, and moving around your environment

activity theory theory that suggests being more active and socially engaged is beneficial for older adults

adult daycare facility that provides supervision and activities for older adults who are not capable of safely staying at home unsupervised

ageism discrimination against or different treatment of someone solely due to their age

aging in place effort to live safely and comfortably at home while maintaining as much independence as possible

assisted living institutional housing for individuals who have physical and/or cognitive limitations that prevent them from living independently or at home

bridge employment paid work after retirement, either in a similar job as before or in a new profession

caregiver individual who looks after and assists those with health problems and functional needs such as ADLs and IADLs

congregate housing residential community or facility that offers older adults more access to resources, including common areas, that typical independent living communities may not provide

continuing care community housing facility that provides a wide range of types of care for older adults, often ranging from independent living to nursing home care

disengagement theory theory that describes shrinking social networks as evidence that separating yourself from your social ties is a normal part of aging

elder abuse mistreatment or neglect of older adults

home health aide individual who travels to older adults' homes and provides assistance with health care, ADLs, IADLs, and other tasks needed to help the individual live at home

instrumental activity of daily living (IADL) task essential to functioning independently, such as using the phone, shopping, preparing meals, performing home maintenance and housekeeping, doing laundry, using transportation, managing medications, and dealing with finances

integrity versus despair final stage of Erickson's psychosocial development, which involves undertaking a life review that includes integrity and accepting life in its entirety with a positive outlook

kinkeeper family member who takes on the responsibility of organizing family events, maintaining family traditions, and helping family members stay in touch

life review someone's reflection on the life they have lived, their behaviors, accomplishments, relationships, and decisions

locus of control extent to which we believe we have personal control over our own life and life outcomes

negative affect extent to which someone experiences negative emotions such as anger or sorrow

nursing home institutional housing similar to assisted living but for residents who need medical care and supervision, including skilled nursing care

pension plan traditional retirement plan in the United States, in which employers provide a lifelong financial benefit to retired employees

phased retirement process of decreasing hours and responsibilities at work to retire gradually over a period of time

positive affect extent to which someone experiences positive emotions such as joy

selection, optimization, and compensation (SOC) theory theory suggesting that older adults become more selective in the activities they pursue, engage in activities to enhance their performance, and change their strategy to adjust for declines

social convoy analogy for the way in which social networks change over time as some new members join and others fall away

social network complex variety of people with whom individuals are socially engaged

social support practical or emotional support provided by people with whom we interact socially

socioemotional selectivity theory theory suggesting that increased focus on emotional goals makes older adults more selective in their social partners, leading to a smaller social network that is more emotionally satisfying

Summary

16.1 The Meaning of Aging in Late Adulthood

- Cultural perspectives on aging are often a combination of positive and negative views. These views may be affected by several factors, including cultural values and perceived competition for limited resources.
- Stereotypes about aging can be either positive or negative, and many (especially the negative ones) aren't supported by research. Stereotypes can lead to ageism and discrimination.
- In Erikson's final stage, integrity versus despair, many people reflect on their life and consider its meaning. Older adults often define themselves in complex ways, reflecting a lifetime of experiences.
- Personality factors such as extraversion and neuroticism change in varying degrees with age. Emotional experiences generally improve in older age, because most people experience more positive and fewer negative emotions.

16.2 Contexts: Family, Friendships, Romantic Relationships, and Social Communities in Late Adulthood

- Social networks tend to get smaller as people age, largely due to an increased focus on close emotional relationships, such as with family.
- Marital satisfaction in later years tends to be high, yet the divorce rate among older adults is increasing.
- Many older adults remarry after experiencing widowhood or divorce; however, older heterosexual men and lesbian women tend to remarry at higher rates than others.
- Older adults gain great benefit from formal social support to meet their more practical needs, and from informal social support to meet both practical and emotional needs.

16.3 Retirement in Late Adulthood

- Choosing when to retire, doing financial planning, and setting postretirement goals and activities are all necessary preretirement tasks.
- After retiring, older adults often engage in paid work, volunteer work, time with family, and leisure activities including sports and travel.
- Retirement age has been increasing, and retirement has been growing less accessible due to the need to plan for a longer retirement (given increased life expectancy), late decisions to start investing for retirement, poor investment choices, and inability to save enough for retirement due to low income.

16.4 Living Environments and Aging in Late Adulthood

- While most older adults maintain their independence, many need housing arrangements that include access to help and other resources.
- Health-care requirements and needs related to IADLs and ADLs often determine the appropriate type of housing environment, such as independent living, assisted living, or nursing home care.
- As an alternative to moving to institutional living environments, many older adults age in place and rely on family or professionals if they have needs that aren't being met.
- Long-term care, especially in institutional settings, can be very expensive, yet many adults do not (or cannot) purchase long-term care insurance or plan for these expenses.
- Elder abuse is a common problem and is most often committed by family members, friends, and acquaintances.

16.5 Successful Social and Emotional Aging in Late Adulthood

- Emotional changes in later adulthood typically demonstrate successful aging as individuals come to

experience more positive emotions and fewer negative ones.

- Resilience, gratitude, and an internal locus of control are all related to more positive outcomes in later adulthood.
- Social relationships also represent successful aging, because most older adults maintain high-quality social relationships throughout life.
- The SOC theory describes how older adults are able to age successfully despite age-related declines.

Review Questions

1. What is an emotional change typically experienced in later life?
   a. a decrease in emotional control
   b. an increase in negative emotions
   c. a decrease in depression
   d. an increase in self-esteem

2. What is the final stage in Erikson's theory called?
   a. self-efficacy versus self-esteem
   b. integrity versus despair
   c. differentiation versus ego transcendence
   d. generativity versus stagnation

3. What occurs when people in their eighties and nineties look beyond their own experience, consider their connections to earlier generations, and accept change as inevitable and natural?
   a. generativity
   b. despair
   c. gerotranscendence
   d. resolution

4. Why might residents of countries with low socioeconomic status and a large population of older adults have negative views of aging?
   a. They view older adults as competitors for limited resources.
   b. Older adults run the government and make unpopular decisions.
   c. Older adults are grouchy and difficult to get along with.
   d. They have to spend time caring for older adults when they'd rather be doing other things.

5. Maria, recently retired, has organized several small family get-togethers and plans to start preparations for a larger reunion including extended family too. Maria has embraced what role in the family?
   a. instrumental social support
   b. caregiver
   c. kinkeeper
   d. grandparent

6. Raymond is in his mideighties and recently lost the ability to drive his car. To adapt to this change, he has identified resources in the community such as Meals on Wheels to provide food and a service that gives older adults rides for shopping and medical appointments. What type of social support is Raymond making use of to ensure that his needs are met?
   a. emotional
   b. instrumental
   c. informal
   d. kinkeeper

7. Research consistently shows that the number of people in older adults' social networks tends to do which of the following?
   a. decrease
   b. increase
   c. remain constant
   d. fluctuate between increases and decreases

8. Ryan recently retired from a high-stress job as an attorney but isn't quite ready to leave paid work entirely. They decide to take a full-time job with a nonprofit organization and apply their legal training to help others. What is the best way to describe Ryan's approach to retirement?
   a. phased retirement
   b. bridge employment
   c. vested retirement
   d. transformative employment

9. Amalfi recently graduated from college and was excited to start his new career. During the orientation period at his new job, he learned that his employer would match his retirement contributions up to 5 percent of his income, and that he was responsible for deciding how to invest the money. What type of retirement plan does Amalfi likely have?
   a. 401(k)
   b. pension
   c. vested pension
   d. flexible health retirement account (FHRA)

10. How do most working adults with low income save for retirement?
   a. They tend to start saving earlier and more consistently.
   b. Their income is not enough to cover basic needs, leaving nothing saved for retirement.
   c. They tend to spread their savings across different types of investments.
   d. They get matched contributions from employers so any personal savings can be doubled.

11. Edward had a series of strokes and hopes to recover over the next several months. Currently, he needs constant medical supervision and is unable to walk or do basic tasks such as feed and bathe himself. He has no resources to obtain this level of assistance at home. What type of housing option would best fit Edward's needs?
   a. assisted living
   b. congregate housing
   c. nursing home
   d. adult daycare

12. Monique is acting as a caregiver for her husband, who has Alzheimer's disease and wants to live at home as long as possible. She has decided she needs to take a break from this role a couple of days a week and also find time to do the shopping and run errands. What would be the most appropriate means to assist Monique in caring for her husband?
   a. assisted living
   b. congregate housing
   c. nursing home
   d. adult daycare

13. What type of elder abuse is believed to be the most common?
   a. financial

b. physical
c. sexual
d. isolation

14. Sandeep has faced many challenges recently, including the death of his spouse, a serious medical scare, and some financial stress. He still functions at a very high level, has just secured a part-time job to help with finances, is active with friends and family, and has a positive outlook on life. What does Sandeep clearly have a lot of?
a. locus of control
b. resilience
c. caregivers
d. selection, optimization, and compensation

15. Birgitta has a large family and several grandchildren. She enjoys cooking large family meals but has found this task more difficult as the years pass. She has decided to change her approach by using instant mashed potatoes instead of homemade to allow her to focus on other dishes. This is an example of which of the following?
a. gratitude
b. selection
c. optimization
d. compensation

16. The concept of resilience is most similar to a(n) _____ locus of control.
a. internal
b. external
c. global
d. local

Check Your Understanding Questions

17. Describe how the "Big Five" personality traits change with age.

18. Briefly describe the three concepts that Peck added to Erikson's stage of integrity versus despair.

19. How do the disengagement theory and the activity theory differ in their explanations of social aging?

20. Describe the two types of social support, instrumental and emotional, and provide an example of each.

21. How do leisure activities typically change after people retire?

22. How does health relate to retirement?

23. How has the change from traditional pensions to 401(k) plans affected the retirement outlook for most workers?

24. Describe some of the negative consequences of providing caregiving for a loved one.

25. What characteristics predict which nursing homes will score low on quality of care?

26. Is successful emotional aging a common outcome for older adults? Support your answer.

27. How might participating in religious services affect well-being in late life?

Personal Application Questions

28. Reflect on how your culture views aging and older adults. Consider the attitudes, beliefs, and practices that you've observed in your family, community, or society. How do these views align with or differ from the

perspectives discussed in the chapter? How might these cultural perceptions influence your own views about aging?

29. Think about a stereotype you've encountered about older adults. How has this stereotype been reinforced or contradicted by your own experiences or by what you've learned in this chapter? Why do you think such stereotypes persist, and how can we work to challenge them in our society?

30. Consider Erikson's concept of integrity versus despair. Reflect on an older adult in your life who you believe has reached a sense of integrity or is struggling with despair. What life experiences do you think contributed to their current outlook? How does Erikson's theory help you understand their emotional state?

31. Reflect on the social networks you currently maintain. Consider how these networks might evolve as you age. Which relationships do you think will remain strong, and which might fade away? How might your priorities in maintaining these relationships change as you enter late adulthood?

32. Consider the concept of a "kinkeeper" in your family. Is there someone in your family who currently takes on this role? Reflect on whether you see yourself or someone else taking on this role as you age. What impact does a kinkeeper have on maintaining family traditions and connections in later life?

33. Reflect on the importance of romantic relationships in late adulthood. How do you think your views on romantic relationships might change as you grow older? Do you envision maintaining or seeking out a romantic relationship in late adulthood? How do you think romantic relationships contribute to the overall well-being of older adults?

34. Reflect on your future retirement plans. What factors do you think will be most important in your decision to retire? Consider elements such as financial stability, health, family responsibilities, and personal fulfillment. How do you envision these factors influencing your retirement timing and lifestyle?

35. Picture your life in retirement. How do you see yourself spending your time? Would you focus on leisure activities, volunteering, or continue some form of work? Reflect on how factors such as your health, financial situation, and social network might shape your choices.

36. Consider a time when you had to help an older adult, such as a grandparent or elderly neighbor, with a daily task (like shopping or using the phone). How did that experience change your understanding of what it means to live independently in older age?

37. Imagine you are helping a loved one choose between different types of housing environments as they age (e.g., independent living, assisted living, or a nursing home). What factors would be most important to consider in making this decision? How would you weigh these factors to determine the best fit?

38. Reflect on a time when you faced a significant challenge. How did your resilience help you navigate the situation? Do you believe this resilience will contribute to your emotional well-being as you age? Why or why not?

39. Consider your current level of participation in social or community activities. How might continuing or increasing your engagement in these activities affect your social aging and overall happiness in the future?

40. Recall a time when you had to adapt to a new situation by changing your approach (e.g., learning a new skill, finding a new way to do something after an injury or setback). How does this experience relate to the concept of selection, optimization, and compensation (SOC) theory, and how do you think applying this approach might help you age successfully?

Essay Questions

41. Examine the cultural views of aging in your community. How do these views affect the treatment and

social roles of older adults? Compare these views with those of a different culture discussed in the chapter. What are the similarities and differences, and how might these affect the well-being of older adults in each culture?

42. Explore how emotional regulation and self-concept evolve in late adulthood. How do these changes impact an older adult's relationships and social interactions? Discuss the implications of these changes for maintaining mental and emotional health in older age.

43. Evaluate the impact of gender, race, and ethnicity on the use of social support in late adulthood. How do these factors influence the reliance on formal versus informal social support systems? Use research findings to support your analysis.

44. Analyze the common barriers to retirement in today's society. Consider financial, psychological, and social factors that may prevent individuals from retiring when they wish to. What strategies could be employed to overcome these barriers?

45. Discuss the pros and cons of aging in place compared to moving to an assisted living facility. Consider factors such as independence, safety, cost, and socialization in your analysis.

46. Analyze the importance of maintaining social relationships in late adulthood. How do meaningful social connections contribute to successful social aging, and what are the potential consequences of social isolation? Provide examples of how individuals can maintain or enhance their social networks as they age.

47. Explain the selection, optimization, and compensation (SOC) theory as it applies to aging. How can older adults use this approach to maintain a high quality of life despite physical or cognitive declines? Provide examples of how SOC strategies can be implemented in everyday life.

Death, Dying, and Grieving

17

FIGURE 17.1 We typically think of death as occurring in old age, but it can occur at any point in the lifespan. Preparing for death and the grief that can surround it is valuable regardless of when or how death occurs. (credit: modification of work "flame" by Dawn/Flickr, CC BY 2.0)

CHAPTER OUTLINE

17.1 Biological, Psychological, and Social Aspects of Death and Dying
17.2 End-of-Life Care
17.3 Coping with Death
17.4 Life Review, Successful Life, and a Good Death

WHAT DOES PSYCHOLOGY SAY? Ray was only forty-four when he was diagnosed with an aggressive, inoperable cancer. In less than six months, he went from being happy and full of vitality to being in constant pain and completely dependent on others for care. Ray had been known for his sense of humor and outgoing personality, but months of tests and unsuccessful hospital treatments sapped his spirit. Whenever he had visitors, he cried and talked about wanting to die. He ultimately decided not to pursue additional treatment and died shortly thereafter.

Ray's husband Geoffrey agonized over his situation, wondering whether there was a "right" course of action. They had both prepared legal documents expressing their end-of-life wishes, but he worried it would be too painful to adhere to Ray's desire to forgo life support equipment if he had to make that decision. Dora, their three-year-old daughter, was too young to understand what was happening. All she knew was that her dad was in the hospital and that he was sad and sick-looking. She worried that she had done something bad to make him go away. After Ray's death, Dora continued to act as though she expected him to come home.

Ray's friends had done what they could during his illness, bringing the family food, taking care of Dora, sitting

with Ray so Geoffrey could go to work. They even snuck his pet cat in to see him when it was obvious the end was near. After his death, his friends paid tribute to him by creating a slideshow of photos from his life and gathering for a memorial service in the building where he had directed many plays for his community theater group.

Ray and the people in his life all struggled with various elements of the dying process. Although each faced different challenges, all had questions, such as:

- What does it mean to die?
- What options exist for health care at the end of life?
- What are the social and cultural dimensions of death?
- What does grief look like, and how do we support someone who's grieving?
- What do children understand about death?
- What does it mean to have a good death?

This chapter will explore these and other questions to get a better understanding of the physical, psychological, and social aspects of death.

17.1 Biological, Psychological, and Social Aspects of Death and Dying

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Define death from a variety of perspectives
- Describe the dying process in physical and psychological terms
- Compare and contrast global differences in life expectancy and causes of death
- Describe the social dimensions of death and dying
- Compare and contrast various cultural perspectives on death and dying

Mateo wants to protect his cardiovascular health. Given the relatively early and sudden deaths from heart disease of his father, abuelo, and uncle, he suspects his family has a genetic vulnerability to this illness, but he wonders whether lifestyle factors such as stressful jobs, lack of exercise, and unhealthy diets might also be to blame. He wishes he had better contact with his extended family in Argentina. Maybe they're doing something differently than his family in the United States and living longer as a result.

Mateo also worries about the process of dying. He doesn't want to endure a long period of declining health, feeling helpless or being regarded as a diagnosis rather than a person. But he doesn't want to die suddenly and without warning either, leaving his loved ones unprepared for that loss.

Many people share Mateo's concerns about death and what it will look like, physically and psychosocially. What happens to our body when we die? How are dying people treated by others, and how do they feel about themselves? What are common causes of death? This section will address these questions.

Defining Death

Death is a physical event in which our bodies stop working, including the absence of breathing and a heartbeat. However, even this statement on describing death is overly simplistic. Our body is far more complex than this, composed of an intricate set of systems working together. These systems don't all play an equal role in keeping us alive, but if something happens to one of them, it's likely to affect the functioning of other systems and our body overall. For example, if our heart, lungs, and/or brain lose function, the other organs in our body may also start to fail. However, due to current medical science and advances, the failure of one organ does not guarantee that other systems of the body will inevitably and immediately lose functioning.

Medical professionals sometimes distinguish between **clinical death**, in which vital organs have stopped working but could be resuscitated, and **biological death**, in which these organs can't be resuscitated (Parish et al., 2018). Depending on what caused the death, clinical death may occur before biological death. In cardiac arrest, for example, it may be possible to start the heart beating again. Or biological death may occur on its

own: If a person is stabbed in the heart, the heart may sustain too much damage to be repaired.

But death isn't just a physical event. It has psychological aspects, such as the way people cope with death, prepare and make decisions about end-of-life care, and express grief. Social aspects of death include the way dying people are treated and the cultural factors like religious and spiritual values and beliefs that affect people's perceptions of dying and choices related to it. A researcher who studies the biological, psychological, and social aspects of death is called a **thanatologist**.

Biological Aspects of Death

The stethoscope was invented in 1819 by a French doctor named René Laënnec, but it wasn't until 1846 that Eugène Bouchut, another French doctor, suggested that its ability to amplify the sound of a heartbeat could help establish that death had occurred and prevent premature burial (Panna, 2021). Thus, death was primarily defined as **cardiopulmonary death**, a state in which a person's heartbeat and breathing have stopped and can't be restarted through cardiopulmonary resuscitation (CPR) or other means (Lewis et al., 2017; Panna, 2021; President's Commission, 1981; Rodman & Breu, 2022). This medical understanding of death prevailed through the late 1960s.

However, the development of machines that can maintain heartbeat and breathing without resuscitation required new criteria to establish that death had occurred. In the 1970s, doctors and legal experts recognized the concept of **brain death** (Greer et al., 2023; Lewis et al., 2017), in which part of the brain stem, the area at the base of the brain just above the spinal cord, has stopped functioning. The brain stem contains the pons and medulla oblongata, structures that control basic functions like breathing, blood pressure, and heart rate. A person who is brain dead will have a heartbeat and breathe only with the aid of machines and medications.

This new definition of death wasn't immediately universally adopted. In the late 1970s, a committee appointed by President Jimmy Carter composed the Uniform Determination of Death Act (UDDA), creating a standard definition of death to ensure more consistent practices across U.S. jurisdictions (Lewis et al., 2017; President's Commission, 1981; Rodman & Breu, 2022). This definition, adopted by most states, says that:

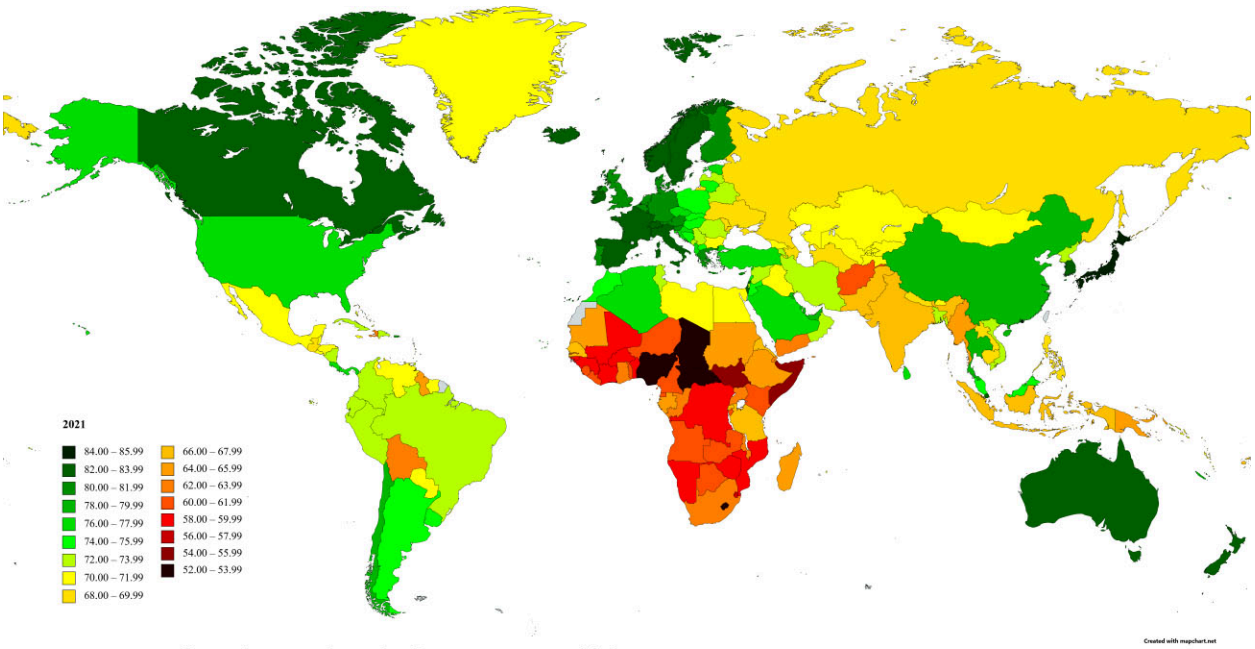
> An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brainstem, is dead. A determination of death must be made in accordance with accepted medical standards. (President's Commission, 1981, p. 2)

While this seems straightforward, this committee didn't define "acceptable medical standards," which vary from state to state. For example, New Jersey allows exemptions for people whose religious faith doesn't recognize brain death, and Virginia requires that both brain death and cardiopulmonary death occur (Nguyen, 2020; Nikas et al., 2016; Omelianchuk et al., 2022). This means someone could be considered alive in one U.S. state but dead in another (Rodman & Breu, 2021).

Life Expectancy across the World

The term mortality describes how we will all inevitably die, while mortality rate describes how common death is in a population. Mortality can be used to describe the prevalence of death in a group based on life stage (e.g., expectant mothers), or based on a demographic category (e.g., race or SES), or in a geographic region (e.g., in a specific country). Although we'll all die eventually, we don't share the same risk factors. We won't live equally long or die of the same causes. Race, socioeconomic status, genetic characteristics, environmental factors, and lifestyle choices all affect the length of our lives and the level of health we'll face along the way.

How long we live—life expectancy—varies person-to-person due to many individual factors, such as sex and age (as you learned in 15.1 Physical Aging in Late Adulthood) and it also varies across the world. Global life expectancy is an average of life expectancies in all the countries of the world (Figure 17.2).



Source: World Bank Group. (2021). Life expectancy at birth.

FIGURE 17.2 Countries shown in green have higher life expectancies, and those in red and dark brown have the lowest. (credit: modification of work "Life expectancy map-world-2021" by "Lady3mlnm," World Bank Group/ Wikimedia Commons, CC0 1.0)

Research consistently shows that life expectancy in many African countries, especially in sub-Saharan Africa, is lower than in many other parts of the world (Abubakari et al., 2019; Cao et al., 2020; Djoumessi, 2022; Freeman et al., 2020; GBD 2019 Demographics Collaborators, 2020; Heuveline, 2022; WHO, 2020). For example, WHO data by region indicate that in 2019, the average life expectancy in Africa was 64.5 years, while life expectancies in southeast Asia, the western Pacific, the Americas, and Europe were all at least 71.4 years (WHO, 2020).

What causes these differences? Within Africa, nations like Rwanda and Lesotho that have experienced high rates of war, terrorism, and political unrest appear make the populations within them particularly vulnerable to higher mortality rates compared to countries with more economic and government stability like Ethiopia (Cao et al., 2020; Freeman et al., 2020; Heuveline, 2022). Sub-Saharan countries like Swaziland, Lesotho, and Mozambique have lower and declining life expectancies due to threats to mortality including outbreaks of wars and/or a higher prevalence of people living with HIV or AIDS (Abubakari et al., 2019; Cao et al., 2020). Many African nations have a high infant mortality rate, largely due to malnutrition and infectious diseases like cholera and malaria, and these deaths are believed to be largely preventable (Abubakari et al., 2019; Djoumessi, 2022; GBD 2019 Demographics Collaborators, 2020).

So how can these deaths be prevented? It might seem like improved economies are the answer, but increased economic resources aren't always associated with increased life expectancy (Abubakari et al., 2019; Djoumessi, 2022; Freeman et al., 2020; Martinez et al., 2021). What seems to be more important is the way governments spend money—specifically, whether they improve sanitation, education, access to health care, and the status of women (Abubakari et al., 2019; Djoumessi, 2022; GBD 2019 Demographics Collaborators, 2020). For example, east African nations like Ethiopia have higher life expectancy than central and west African nations like Cameroon and Ghana, despite higher rates of HIV infection; this difference is attributed to governments' allocating more money to provide universal health care, clean drinking water, and programs that increase health-care options in rural areas (Abubakari et al., 2019; Djoumessi, 2022; Freeman et al., 2020).

Common Causes of Death

Like life expectancy, the most common causes of death differ by demographic variables. For example, men

worldwide are more likely to die of accidents, murder, and suicide than women (WHO, 2019). Geographic location also plays a role, usually due to the resources and living conditions in an area. For example, in Angola, diarrheal disease (cholera, rotavirus) is the most common cause of death, likely due to lack of clean drinking water; however, in Canada, the leading cause of death is heart disease (Global Health Observatory, n.d.-a).

As of 2019, heart disease was the most common cause of death worldwide. It accounted for 9 million deaths recorded that year; stroke and COPD were second and third (WHO, 2020). However, the COVID-19 pandemic changed the statistics somewhat. The WHO estimates that the **excess mortality** attributable to COVID-19 was 3 million people in 2020. In other words, in 2020, COVID-19 caused 3 million more deaths worldwide than would have occurred without it (WHO, 2021). In the United States, COVID-19 replaced unintentional injury/accidents as the third most common cause of death in 2020 and 2021 (Xu et al., 2022), then dropped to fourth in 2022 (Ahmad et al., 2023).

Falls are another frequent cause of injury-related death among adults ages sixty-five and older, and the death rate from falls is increasing (CDC, 2024). The age-adjusted fall death rate increased by 41 percent from 2012 to 2021, from approximately 55 to nearly 80 fall-related deaths per 100,000 older adults (CDC, 2024).

Common causes of death also vary by age. In the United States, the most common cause of death for infants less than one year old is congenital abnormality (WISQARS, 2022). From ages 1 to 44, the most common cause is unintentional injury/accident. Even within that category, however, there are age-related differences. For children aged 1 to 4, the most common type of fatal unintentional injury is drowning, while from 5 to 24, it is motor vehicle accidents (CDC, n.d.). In many developing nations, infectious diseases and malnutrition are more commonly the causes of death, especially in children under five (Abubakari et al., 2019; Djoumessi, 2022; GBD 2019 Demographics Collaborators, 2020).

Trajectories of Dying

In 1968, Glaser and Strauss proposed the existence of three dying trajectories. A **dying trajectory** is a pathway to death that varies on dimensions such as the nature and rate of decline. Lunney and colleagues added a fourth dimension in 2002 (Figure 17.3) (Cohen-Mansfield et al., 2018). The four dying trajectories shown in Figure 17.4 are sudden death, terminal illness, organ failure, and frailty.

- Sudden death is an abrupt loss of function, as in heart attack, stroke, and accidents.
- Terminal illness is a more gradual loss of function, such as from cancer.
- Organ failure is characterized by an overall gradual decline with fluctuating cycles of illness and improvement, as in kidney failure, chronic obstructive pulmonary disease (COPD), and congestive heart failure.
- Frailty is also gradual, but with a lower level of functioning and steadier decline without cycles of improvement, as in Alzheimer's disease and diabetes.

Each dying trajectory may require different adaptation and adjustment (Cohen-Mansfield et al., 2018; Lunney et al., 2002). For example, terminal illness is associated with increased symptoms of depression and anxiety for the dying person (Tang et al., 2014), while frailty often increases emotional and financial burdens for caregivers (Covinsky et al., 2003).

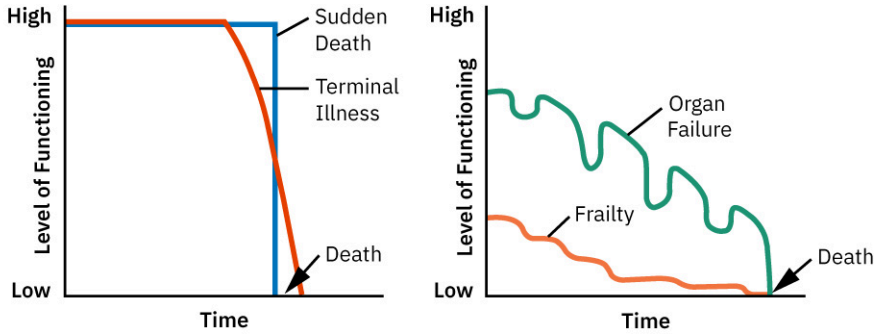


FIGURE 17.3 In each proposed dying trajectory, the x-axis shows the length of time a person lives, and the y-axis shows the person's level of functioning. Depending on the cause of death, the decline in functioning may be sudden, gradual, or fluctuating. (a) Sudden death and terminal illness are marked by a steep decline from a high level of functioning. (b) Deaths due to illness or disease begin from a lower level of functioning and demonstrate more noticeable fluctuation over time. (attribution: Copyright Rice University, OpenStax, under CC BY NC-SA 4.0 license)

The Process of Dying

Along with there being many potential causes of death, a single cause of death can be experienced very differently by different individuals. The same cause of death can follow different timelines, depending on such factors as how a diagnosis of illness occurs. Regardless of the specific cause, there are biological processes that happen to our bodies when we die.

Death occurs either when certain types of cells (such as those in the pons and medulla oblongata in the brain) stop working, or when enough cells in an organ have stopped working that the organ no longer functions. In either case, the body can't carry out its normal processes. "Whether gradual or sudden, death is actually a series of events that occurs over time" (Murray, 2010, p. 33). The time frame might be long or short, but even in sudden death, a series of events still takes place. The human body wasn't designed to last forever (Murray, 2010). Our cells have life expectancies of their own—for example, red blood cells live for about four months—and we don't always get new ones to replace cells that were worn out or damaged, particularly in our muscles and brain.

One well-documented phenomenon is terminal decline, a decline in functioning within the last few years of life and especially in the last five years before death (Figure 17.4). This decline can affect cognitive functions such as memory, visuospatial skills, and word knowledge, as well as physical functions such as balance and manual dexterity (Gerstorf & Ram, 2013). It occurs reliably in older adults, although the rate of decline appears to depend on how high-functioning the person is in old age, the presence of underlying diseases, and mental health problems like depression (Brandmaier et al., 2017; Gerstorf & Ram, 2013; Theill et al., 2018).

FIGURE 17.4 As people age, they may experience declines in physical and cognitive function. (credit: "Elderly male

standing on walker in room" by rawpixel.com/nappy, CC0 1.0)

When a person dies slowly, from age or chronic illness, there's often a noticeable period shortly before death during which they seem to change. They may stop eating and drinking, seem weak, and sleep more than usual. Lack of fluids and nutrients can affect the cardiovascular system, making it hard for blood to flow normally throughout the body. As a result, blood pressure drops, the kidneys start to fail, and the person's arms and legs may get cold, blotchy, and/or turn blue, gray, or ashen in color due to lack of blood circulation (Figure 17.5). The heart rate may increase as the heart tries to push blood throughout the body (Murray, 2010; Parish et al., 2018). Lack of fluids and nutrients can also affect the brain, causing confusion and agitation, and preventing the brain from effectively monitoring breathing, heartbeat, and body temperature. Body temperature drops, breathing slows and becomes irregular, and the person enters an unconscious or semiconscious state. Eventually, all body systems stop working (Murray, 2010; Parish et al., 2018).

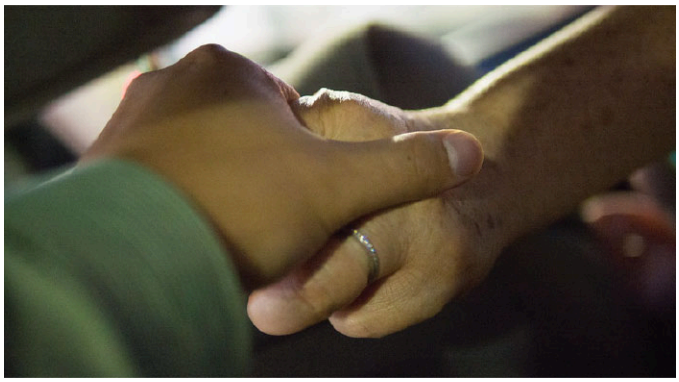


FIGURE 17.5 People who are dying may be cold and confused, and they can benefit from the soothing touch of a caregiver. (credit: modification of work "Me and Mom" by Eugene Kim/Flickr, CC BY 2.0)

LINK TO LEARNING

Does death on TV and in movies look like death in real life? Many health-care workers do not think so. National Public Radio tells a story about some efforts to portray death more realistically (https://openstax.org/r/104RealisticDth) in popular media.

Psychological Aspects of Death

Death also has psychological aspects. The experience of death isn't the same for everyone. Even when two people share the same cause of death, such as breast cancer, they may differ in the speed of progression, the pain they experience, and the kind and amount of support they have.

Being aware (or not) of impending death might affect a person's self-concept, and how helpful that awareness is can vary person to person.

Being diagnosed with a terminal illness is likely to change a person's self-perception (Aho, 2016; Greenberg et al., 1986; Kalish, 1968; Raju & Reddy, 2018; Zhang et al., 2023). When people are unable to care for themselves or participate in typical aspects of daily life, they may experience a loss of identity (Bryden, 2019; Fang et al., 2023; Gaignard & Hurst, 2019). This may also happen when people with dementia forget important memories or loved ones and lose a general sense of continuity in their lives (Blandin, 2016). In her 2019 account of living with dementia, biochemist Christine Bryden–diagnosed with early onset dementia at age forty-six—explained that her intellectual functioning was a key part of her identity and crucial to her career. She worried that her progressing illness was removing that aspect of herself, and that she would become her diagnosis, lose her individuality, and be seen as merely a dementia patient. A study of terminally ill brain cancer patients in India found such results: patients reported that others started to treat them as a sick person and not as an individual, whereas they wanted to be treated as they had been before getting sick (Raju & Reddy, 2018) (Figure

17.6).

(a) (b)

FIGURE 17.6 Regardless of age or health status, people want to be treated as individuals who can practice autonomy such as (a) choosing to run errands and (b) deciding what to eat. (credit a: modification of work "Shoppers" by Maggie Jones/Flickr, Public Domain; credit b: modification of work "Just looking" by Thomas Luebke/Flickr, CC BY 2.0)

Death can be a difficult or awkward topic to discuss or even acknowledge (Figure 17.7). Psychologist Suzanne M. Miller (1995) proposed two relevant coping styles: **monitoring**, in which people seek out information about a problem even if it represents bad news, and **blunting**, in which people avoid potentially distressing information. These styles have implications for how much distress a person may feel when diagnosed with a terminal illness, and they may also influence how comfortable the person is discussing it with others (Pao & Mahoney, 2018).

FIGURE 17.7 People have different comfort levels discussing health-care matters with medical professionals. (credit: "Nurse administers chemotherapy" by Rhoda Baer, National Cancer Institute/Wikimedia Commons, Public Domain)

But do people benefit from knowing they're dying? Does this knowledge make them scared or prepared? Does it cause them to seek comfort or push others away? These questions don't have simple answers. In general, thinking about death makes people anxious; however, this anxiety will prompt some people to prepare, while

others will feel helpless and overwhelmed. Thinking about their own death also affects the way people interact with others, particularly people they view as different. When people feel that their sense of self is threatened, as when they're worried about their own death, they try to preserve that sense of self by becoming more committed to cultural values and showing more **outgroup bias**, negative feelings about people perceived as different (Greenberg et al., 1986; Juhl & Routledge, 2016; Ma-Kellams & Blascovich, 2011; Rubin, 2018). The idea that people try to preserve their identity in the face of a threat of impending death is called **terror management theory** (Greenberg et al., 1986). However, not everyone reacts to this threat the same way. European-Americans are more likely to react with outgroup bias than are Asian Americans. The collectivist orientation of many Asian cultures may emphasize bonding with others during times of trouble (Ma-Kellams & Blascovich, 2011; Kwon & Park, 2022), although not all research supports this (e.g., Otsubo & Yamaguchi, 2023).

People who worry about what awaits them after death may also experience **death anxiety**. Nichols and colleagues' (2018) cross-cultural study looked at the relationship between views of the self and fear of death among Christians, Hindus, and Tibetan Buddhist monks. Christians generally view the soul (self) as separate from the body, existing continuously throughout life and after death. Hindus similarly view the self's existence as continuous, but believe it is reincarnated after death. These two perspectives may make people fear death if they're concerned about what might happen to them in the afterlife. Indo-Tibetan Buddhism, on the other hand, takes the perspective that nothing is permanent, including the self; therefore, death isn't something to fear.

IT DEPENDS

Do Children Understand Death?

What do children understand about death? As you might expect, older children tend to understand more about death than younger children, although experiences such as having a death in the family and participating in cultural death rituals can change that (Menendez et al., 2020).

Understanding death requires comprehending that death is universal and irreversible—everyone dies, and once you die, you don't come back. It also requires understanding that death can happen from a variety of causes, and that all functions of the body stop working. This last component is believed to be the most difficult to acquire, because it requires knowing how the body works (Bonoti et al., 2013; Carter, 2016; Menendez et al., 2020; Vázquez-Sánchez et al., 2019; Yang & Park, 2017). Understanding irreversibility appears to be especially challenging for children in the age range associated with Piaget's preoperational stage of development, possibly because their egocentrism makes it hard for them to understand someone else's experience (Yang & Park, 2017).

Traditionally, it was believed that children under the age of two or three had limited, if any, understanding of death, that children aged five to seven (sometimes five to nine) had partial understanding, and that full understanding of death occurred between seven and nine years (Carter, 2016; Vázquez-Sánchez et al., 2019; Yang & Park, 2017). However, in many cases, children appear to understand more at younger ages than previously believed. Evidence suggests they can often grasp irreversibility and universality by age five, and the idea that death can come from a variety of causes by age six (Bonoti et al., 2013; Carter, 2016; Menendez et al., 2020).

LINK TO LEARNING

Talking with children about death and grief can be challenging. Here are some resources for adults to use, both with children and for themselves.

- "Sesame Workshop": This website provides resources and videos on how to talk to children about the loss

(https://openstax.org/r/104SesameStreet) of a loved one.
- National Public Radio: NPR's "Life Kit" series discusses how to have difficult conversations (https://openstax.org/r/104KidDthConvo) with your child.
- UNICEF: UNICEF Parenting offers advice and tips on how to talk to children and teenagers (https://openstax.org/r/104UNICEF) about death.
- The Cove Center for Grieving Children: Read these FAQs about grieving children (https://openstax.org/r/104GrievingChld) for more information on what to expect from a grieving child.

Social and Cultural Aspects of Death

Death affects not only the person who dies but also their friends, family, and acquaintances. It is thus a social occurrence. Even less intimate relationships may experience some level of adjustment to a loss. We often meet the social expectations associated with death by attending services or bringing food to the deceased person's family, for example.

A **social death** occurs when a person is viewed as no longer part of society. This may happen in several ways. A person who is dying may be excluded from social invitations. Other people may not ask for their opinions and may talk about them in their presence without acknowledging them (Borgstrom, 2017; Ghane et al., 2021; Králová, 2015). The intentions may be good ones, such as trying to avoid upsetting the dying person with reminders of events they can't attend (Figure 17.8). People who are dying may also choose to withdraw from social activities, imposing social death on themselves (Caswell & O'Connor, 2015). This might be a rational choice, but it may still create what Gaignard and Hurst call "loss of social significance" (2019, p. 5), in which a person feels lonely and useless. Social death may also occur if a person isn't actively dying but has a chronic illness or stigmatizing condition, such as mental illness or AIDS (Ghane et al., 2021). Caregivers may also experience social death in that they tend to report more social isolation than non-caregivers (Kovaleva et al., 2018; Liang et al., 2023; Walker et al., 2023).

FIGURE 17.8 People who are dying may be excluded from—or exclude themselves from—social interactions. (credit: modification of work "UFV - Dr. Jean Scott 102" by University of the Fraser Valley/Wikimedia Commons, CC BY 2.0)

Religious and Spiritual Views of Death and Dying

Whether religion and spirituality influence views of death and dying, and in what way, is a complex topic. We might assume that people who report more religiosity or spirituality find comfort in their beliefs and thus report lower rates of death anxiety, but that's not necessarily true. Religion can be comforting and help give death a sense of meaning, but death can cause people to question their faith, which may be distressing (Neimeyer et al., 2021). And not having any particular religious or spiritual beliefs doesn't appear to have any significant negative impact. People with a more secular orientation do not report higher levels of stress or anxiety related to death or more difficulty coping (Ahmadi & Zandi, 2021; Schweda et al., 2017).

Religious views of death and dying often include ideas of an afterlife and a self-assessment of whether we made the "right" choices in life. Not surprisingly, if people believe a happy afterlife awaits them, they're likely to be less anxious about dying than people who are worried about the possibility of a negative afterlife (Drążkowski & Trepanowski, 2021; Ghayas & Batool, 2021; Gire, 2014). Belief systems conveying that death is a punishment can increase anxiety as well (Ahmadi & Zandi, 2021). On the other hand, belief systems that emphasize death as natural or a transition instead of an ending, such as Buddhism, are often associated with lower anxiety (Dorji & Lapierre, 2022).

Religious views may also affect the way people feel about end-of-life treatments or even the way they define the end of life itself (Figure 17.9). For example, Christianity and Islam often regard their higher power (i.e., God, Allah) as a sovereign in control of what happens to them. This means that the use of end-of-life treatments or euthanasia may be frowned upon as going against "God's will" (Daniels-Howell, 2022; Eyetsemitan, 2002; Krikorian et al., 2020; Nadeem et al., 2017; Searight, 2022; Testoni et al., 2020). Some branches of Judaism reject the notion of brain death and use cardiopulmonary death as an indicator of true death; as a result, some states require health-care providers to use that standard when requested.

(a)

(b)

FIGURE 17.9 Funeral practices may vary according to religious or spiritual beliefs, such as (a) a Catholic service at a cemetery burial or (b) A person wearing a tallit or prayer shawl. (credit a: modification of work "Burial" by Let Ideas Compete/Flickr, Public Domain; credit b: modification of work "A blue prayer shawl" by zeevveez/Flickr, CC BY 2.0)

Cultural Views of Death and Dying

What we think of as "culture" has many dimensions, including, but not limited to, religion, country of origin, gender, and ethnicity. Even people who share broad cultural labels may not share similar beliefs or engage in similar practices, however. For example, when a group emigrates from one country to another, they don't all adopt the customs of the new country, maintain the customs of their old country, or balance the two in the same ways.

International views of death and dying may depend, at least in part, on the causes and contexts of death. As you've learned, causes of death and the ages at which it occurs differ worldwide. As a result, some countries may experience more sudden death, death from infectious disease, death from war and violence, and death at younger ages than other countries. Other factors such as gender roles and stigma may affect views of death. Before marriage equality, lesbian and gay couples faced unique struggles related to their rights to support their partner including being denied hospital visitation and medical decision making ability (Mohanty, 2010). Men and women in married relationships often face different challenges following the death of their spouse. Women traditionally bear a bigger financial burden than men following the loss of a spouse, whereas men struggle more with household tasks following the loss of a spouse (Dabergott, 2022). Regarding stigma, AIDS is a common cause of death in Africa, particularly in sub-Saharan nations (Abubakari et al., 2019; Cao et al., 2020), but it's not always recorded as the cause of death due to the stigma associated with it (Bradshaw et al.,

2016).

International views of death often vary by whether a county has a primarily individualistic or collectivistic orientation. In individualistic cultures, there's a strong focus on individual autonomy and choice at the end of life (Karumathil & Tripathi, 2022; Walter, 2003). In collectivistic cultures, such as those in Turkey, Iran, China, and many Indigenous Native Americans, there tends to be more focus on making group decisions, building consensus, maintaining the social order, and trusting authority figures (Anderson & Woticky, 2018; Karumathil & Tripathi, 2022; Krikorian et al., 2020). For example, in Japan, patients tend to view trusting doctors as more important than exercising autonomy. This is consistent with the Japanese custom of *omakase*, which dictates that medical decisions are best left to medical experts (Krikorian et al., 2020). People living in collectivist cultures may also not ask the patient about their wishes or even be honest with them about their impending death (Karumathil & Tripathi, 2022).

Other international differences are country- or region-specific. For example, openly expressing grief is generally acceptable in Egypt, but not in Taiwan or Bali. Among the Achuar in eastern Ecuador, there is an attempt to forget about the dead as soon as possible, due to a fear that the dead person may cause trouble by bringing bad luck to the family or even seeking revenge for perceived mistreatment while they were alive (Gire, 2014). In Mexico, in contrast, an entire holiday, *Dia de los Muertos* or "Day of the Dead," is devoted to remembering ancestors (Figure 17.10).

(a)

(b)

FIGURE 17.10 *Día de los Muertos* observations may include activities such as (a) participating in a parade like this one in Albuquerque, New Mexico, or (b) remembering ancestors by setting up an altar, such as this one in Mexico City, Mexico. (credit a: modification of work "Dia de los Muertos" by Larry Lamsa/Flickr, CC BY 2.0; credit b: modification of work "Día de muertos en Milpa Alta" by Eneas De Troya/Flickr, CC BY 2.0)

IT DEPENDS

How Do Different Cultural Groups View Brain Death?

Not all cultures are equally accepting of brain death. In countries such as Japan, China, and the Republic of Korea, brain death is an acceptable diagnosis only in cases of organ donation and requires approval from the patient's family, but not necessarily an advance directive from the patients themselves. In the Republic of Korea, a diagnosis of brain death also requires unanimous approval from a special committee (Terunuma & Mathis,

2021; Yang & Miller, 2015), making the process longer and more complicated.

We can also look at religious factors in acceptance of brain death. Buddhism views the body and soul holistically, as one entity, with body heat and a heartbeat being signs of life (Terunuma & Mathis, 2021; Yang & Miller, 2015). Because Buddhism has a strong belief in an afterlife and reincarnation, the body must be left intact; harvesting organs for donation is often seen as mutilation (Yang & Miller, 2015). This may explain why organ donation isn't common in countries with a large Buddhist population, such as China, Japan, and the Republic of Korea (Terunuma & Mathis, 2021).

Within countries—intranationally—people vary in their views of death and dying. Due to the multicultural makeup of many nations, inhabitants may not share identical values and practices. The Canadian population, for example, is represented by about 200 distinct ethnic origins (Shooshtari et al., 2021).

Traditionally, Native American communities within the United States take a collectivistic perspective and regard death as a community experience, in which communities gather to support the bereaved and participate in rituals to honor the deceased. Traditional beliefs generally regard life as cyclical, and death as a natural part of that cycle. Native Americans may believe the afterlife is good and the spirit lives on after death, possibly even visiting and guiding loved ones through dreams and natural symbols such as animals. Traditionally, some Native Americans consider the number four sacred because some natural phenomena like winds and the seasons happen in fours, so they may wait four days after death to bury the deceased, to give the deceased person's soul time to visit loved ones (Walker, 2019).

Of course, Native Americans in the United States are not uniform and experience some important differences. While Native Americans tend to be monotheistic, they differ in their views of what "God" is. The Lakota Sioux refer to their guiding spirit as "Grandfather," while the Muscogee Creek think of a genderless energy. Although it's a common tradition to put mementos in the deceased person's casket, what those mementos are can also vary. The mementos might be personal belongings (Muscogee Creek), locks of hair (Lakota), or tobacco (Ojibwe). Burial and funeral practices differ as well. Apache, for example, bury the deceased person's belongings in a separate grave next to the body, and Navajo people avoid saying the deceased person's name after the funeral so they don't accidentally call the person's spirit back to earth (Walker, 2019).

INTERSECTIONS AND CONTEXTS

Nigeria's Diverse Views of Death

Nigeria provides an interesting example of how different traditions intersect in their views of death. Nigeria's history and culture include a mix of Christian and Islamic religious practices as well as traditional ancestor worship; some Nigerians practice more than one tradition. In Islam, Allah is all-powerful and all-ruling, and will judge our actions after death. Christians believe their faith will lead them to a better place after death and that God has a plan for all life's challenges and difficulties. In traditional ancestor worship, life is cyclical, and the dead can be reincarnated in new births and/or be alive in a different spirit world (Anizoba et al., 2021; Eyetsemitan, 2002; Ushe, 2017).

These differences can produce conflicts if a person adheres to more than one belief system. For example, a Nigerian who follows both ancestor worship and Christianity may have trouble reconciling the Christian notion of God's will with the idea that someone's death has been caused by witchcraft. Marriages are also regarded differently within these belief systems in ways relevant to death. In Nigerian Christian marriages, a widow is assumed by default to inherit all her husband's assets, but in "customary law" marriages, widows inherit nothing and must rely on their husband's relatives for financial support. Though its practice is relatively rare, Islamic law permits polygamy (Abbasi & Cheema, 2020; Rohmadi et al., 2022), so if a man has multiple wives, division of assets might not be clear; some people may marry within more than one system, which complicates matters

further (Eyetsemitan, 2002).

Nigeria's culture and diversity of beliefs demonstrates why we must be cautious in describing the beliefs and practices of various cultures and countries. There's no single "Nigerian view" of death, because Nigerians adhere to a variety of traditions and belief systems. Many other nations also have diverse populations, and increased globalization multiplies this diversity. While knowing someone's country of origin or residence may give clues to that person's belief system, it's not a substitute for getting to know them as an individual.

References

Abbasi, M. Z., & Cheema, S. A. (2020). Polygamy and second marriage under Muslim family law in Pakistan: Regulation and impact. *Islamic Studies, 59*(1), 29–50. https://www.jstor.org/stable/27088374

Abubakari, M., Owoo, N. S., & Nketiah-Amponsah, E. (2019). Socio-economic determinants of life expectancy in Sub-Saharan Africa. *Ghanaian Journal of Economics, 7*(1), 156–177. https://www.researchgate.net/publication/339336935_Socio-economic_determinants_of_life_expectancy_in_Sub-Saharan

Ahmad, F. B., Cisewski, J. A., Xu, J., & Anderson, R. N. (2023). Provisional mortality data—United States, 2022. *MMWR Morbidity and Mortality Weekly Report, 72*, 488–492. http://dx.doi.org/10.15585/mmwr.mm7218a3

Ahmadi, F., & Zandi, S. (2021). Meaning-making coping methods among bereaved parents: A pilot survey study in Sweden. *Behavioral Sciences, 11*(10), 131. https://doi.org/10.3390/bs11100131

Aho, K. A. (2016). Heidegger, ontological death, and the healing professions. *Medicine, Health Care and Philosophy, 19*, 55–63. https://doi.org/10.1007/s11019-015-9639-4

Anderson, B. O., Berdzuli, N., Ilbawi, A., Kestel, D., Kluge, H. P., Krech, R., Mikkelsen, B., Neufeld, M., Poznyak,V., Rekve, D., Slama, S., Tello, J., & Ferreira-Borges, C. (2023). Health and cancer risks associated with low levels of alcohol consumption. *The Lancet Public Health, 8*(1), E6–E7. https://doi.org/10.1016/S2468-2667(22)00317-6

Anderson, M., & Woticky, G. (2018). The end of life is an auspicious opportunity for healing: Decolonizing death and dying for urban Indigenous people. *International Journal of Indigenous Health, 13*(2), 48–60. https://doi.org/10.32799/ijih.v13i2.32062

Anizoba, E. C., & Onyeume, A. O. (2021). Critical examination of traditional worship systems among Igbo people of Nigeria: Study of Akpo community. *Trames: A Journal of the Humanities and Social Sciences, 25*(1), 83–99. https://doi.org/10.3176/tr.2021.1.06

Blandin, K. (2016). The self that remains: A symbolic analysis of the psychological death of the self in Alzheimer's disease. *International Journal of Jungian Studies, 8*(2), 98–109. https://doi.org/10.1080/19409052.2016.1140064

Bonoti, F., Leondari, A., & Mastora, A. (2013). Exploring children's understanding of death: Through drawings and the Death Concept Questionnaire. *Death Studies, 37*(1), 47–60. https://doi.org/10.1080/07481187.2011.623216

Borgstrom, E. (2017). Social death. *QJM: An International Journal of Medicine, 110*(1), 5–7. https://doi.org/10.1093/qjmed/hcw183

Bradshaw, D., Msemburi, W., Dorrington, R., Pillay-van Wyk, V., Laubscher, R., Groenewald, P., & South African National Burden of Disease Study team. (2016). HIV/AIDS in South Africa: How many people died from the disease between 1997 and 2010? *AIDS, 30*(5), 771–778. https://doi.org/10.1097/QAD.0000000000000947

Brandmaier, A. M., Ram, N., Wagner, G. G., & Gerstorf, D. (2017). Terminal decline in well-being: The role of multi-indicator constellations of physical health and psychosocial correlates. *Developmental Psychology, 53*(5), 996–1012. https://doi.org/10.1037/dev0000274

Bryden, C. (2020). Challenging the discourses of loss: A continuing sense of self within the lived experience of dementia. *Dementia, 19*(1), 74–82. https://doi.org/10.1177/1471301219876711

Cao, X., Hou, Y., Zhang, X., Xu, C., Jia, P., Sun, X., Sun, L., Gao, Y., Yang, H., Cui, Z., Wang, Y., & Wang, Y. (2020). A comparative, correlate analysis and projection of global and regional life expectancy, healthy life expectancy, and their GAP: 1995–2025. *Journal of Global Health, 10*(2), Article 020407. https://doi.org/10.7189/jogh.10.020407

Carter, M. (2016). *Helping children and adolescents think about death, dying and bereavement*. Jessica Kingsley Publishers. https://doi.org/10.1093/bjsw/bcx079

Caswell, G., & O'Connor, M. (2015) Agency in the context of social death: Dying alone at home. *Contemporary Social Science, 10*(3), 249–261. https://doi.org/10.1080/21582041.2015.1114663

Centers for Disease Control and Prevention (2024, May 9). *Older adult falls data*. https://www.cdc.gov/falls/data-research/index.html

Centers for Disease Control and Prevention (n.d.). *WISQARS leading causes of death visualization tool*. https://wisqars.cdc.gov/lcd/?o=LCD&y1=2021&y2=2021&ct=10&cc=ALL&g=00&s=0&r=0&ry=0&e=0&ar=lcd1age&at=groups&ag=lcd1age&a1=0&a2=199

Cohen-Mansfield, J., Skornick-Bouchbinder, M., & Brill, S. (2018). Trajectories of end of life: A systematic review. *The Journals of Gerontology: Series B, 73*(4) 564–572. https://doi.org/10.1093/geronb/gbx093

Conigrave, K. M., Hu, B. F., Camargo, C. A., Stampfer, M. J., Willett, W. C., & Rimm, E. B. (2001). A prospective study of drinking patterns in relation to risk of type 2 diabetes among men. *Diabetes, 50*(10), 2390–2395. https://doi.org/10.2337/diabetes.50.10.2390

Covinsky, K. E., Eng, C., Lui, L. Y., Sands, L. P., & Yaffe, K. (2003). The last 2 years of life: Functional trajectories of frail older people. *Journal of the American Geriatrics Society, 51*(4), 492–498. https://doi.org/10.1046/j.1532-5415.2003.51157.x

Crimmins, E. M., Shim, H., Zhang, Y. S., & Kim, J. K. (2019). Differences between men and women in mortality and the health dimensions of the morbidity process. *Clinical Chemistry, 65*(1), 135–145. https://doi.org/10.1373/clinchem.2018.288332

Dabergott, F. (2022). The gendered widowhood effect and social mortality gap. *Population Studies, 76*(2), 295–307. https://doi.org/10.1080/00324728.2021.1892809

Daniels-Howell, C. (2022). Caring for children with life-limiting illness in Bloemfontein, South Africa: Challenging the assumptions of the "good death." *OMEGA - Journal of Death & Dying, 85*(2), 317–344. https://doi.org/10.1177/0030222820944099

Djoumessi, Y. F. (2022). The impact of malnutrition on infant mortality and life expectancy in Africa. *Nutrition, 103–104*, Article 111760. https://doi.org/10.1016/j.nut.2022.111760

Djoussé, L., Biggs, M .L., Mukamal, K. J., & Siscovick, D. S. (2007). Alcohol consumption and type 2 diabetes among older adults: The Cardiovascular Health Study. *Obesity, 15*(7), 1758–1765. https://doi.org/10.1038/oby.2007.209

Dorji, N., & Lapierre, S. (2022). Perception of death and preference for end-of-life care among Asian Buddhists living in Montreal, Canada. *Death Studies, 46*(8), 1933–1945. https://doi.org/10.1080/07481187.2021.1872743

Drążkowski, D., & Trepanowski, R. (2021). *I do not need to wash my hands because I will go to Heaven anyway: A study on belief in God and the afterlife, death anxiety, and COVID-19 protective behaviors*. PsyArXiv. https://doi.org/10.31234/osf.io/yhw3u

Eyetsemitan, F. (2002). Cultural interpretation of dying and death in a non-Western society: The case of Nigeria. *Online Readings in Psychology and Culture, 3*(2). https://doi.org/10.9707/2307-0919.1090

Fang, C., Baz, S. A., Sheard, L., & Carpentieri, J. (2023). 'I am just a shadow of who I used to be'—Exploring existential loss of identity among people living with chronic conditions of Long COVID. *Sociology of Health & Illness, 46*(1), 1–19. https://doi.org/10.1111/1467-9566.13690

Feinman, R. D., Pogozelski, W. K., Astrup, A., Bernstein, R. K., Fine, E. J., Westman, E. C., Accurso, A., Frassetto, L., Gower, B. A., McFarlane, S. I., Nielsen, J., Krarup, T., Saslow, L., Roth, K. S., Vernon, M. C., Volek, J. S., Wilshire, G. B., Dahlqvist, A., Sundberg, R., Childers, A., Morrison, K., Manninen, A. H., Dashti, H. M., Wood, R. J., Wortman, J., & Worm, N. (2015). Dietary carbohydrate restriction as the first approach in type 2 diabetes management: Critical review and evidence base. *Nutrition, 31*(1), 1–13. https://doi.org/10.1016/j.nut.2014.06.011

Freeman, T., Gesesew, H. A., Bambra, C., Giugliani, E. R. J., Popay, J., Sanders, D., Macinko, J., Musolino, C., & Baum, F. (2020). Why do some countries do better or worse in life expectancy relative to income? An analysis of Brazil, Ethiopia, and the United States of America. *International Journal for Equity in Health, 19*(1), Article 202. https://doi.org/10.1186/s12939-020-01315-z

Gaignard, M. E., & Hurst, S. (2019). A qualitative study on existential suffering and assisted suicide in Switzerland. *BMC Medical Ethics, 20*(1), Article 34. https://doi.org/10.1186/s12910-019-0367-9

GBD 2019 Demographics Collaborators. (2020). Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: A comprehensive demographic analysis for the Global Burden of Disease Study 2019. *The Lancet, 396*(10258), 1160–1203. https://doi.org/10.1016/S0140-6736(20)30977-6

Gerstorf, G., & Ram, N. (2013). Inquiry into terminal decline: Five objectives for future study. *The Gerontologist, 53*(5), 727–737. https://doi.org/10.1093/geront/gnt046

Ghane, G., Shahsavari, H., Zare, Z., Ahmadnia, S., & Siavashi, B. (2021). Social death in patients: Concept analysis with an evolutionary approach. *SSM - Population*

Health, 14. https://doi.org/10.1016/j.ssmph.2021.100795
Ghayas, S., & Batool, S. S. (2021). Religious orientation and death anxiety among elderly Pakistani Muslims: Mediational role of afterlife belief and ego integrity. *Journal of Behavioural Sciences, 31*(1), 73–97. https://www.proquest.com/docview/2503623254?sourcetype=Scholarly%20Journals
Gire, J. (2014). How death imitates life: Cultural influences on conceptions of death and dying. *Online Readings in Psychology and Culture, 6*(2). https://doi.org/10.9707/2307-0919.1120
Glaser, B., & Strauss, A. L. (1968). *Time for dying*. Aldine Publishing Co.
Global Health Observatory (n.d.-a). *Global health estimates: Leading causes of death*. World Health Organization. https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death
Goldberg, I. J., Mosca, L., Piano, M. R., & Fisher, E. A. (2001). Wine and your heart: a science advisory for healthcare professionals from the Nutrition Committee, Council on Epidemiology and Prevention, and Council on Cardiovascular Nursing of the American Heart Association. *Circulation, 103*(3), 472–475. https://doi.org/10.1161/01.cir.103.3.472
Greenberg, J., Pyszczynski, T., Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self*. Springer. https://doi.org/10.1007/978-1-4613-9564-5_10
Greer, D. M., Kirschen, M. P., Lewis, A., Gronseth, G. S., Rae-Grant, A., Ashwal, S., Babu, M. A., Bauer, D. F., Billinghurst, L., Corey, A., Partap, S., Rubin, M. A., Shutter, L., Takahashi, C., Tasker, R. C., Varelas, P. N., Wijdicks, E., Bennett, A., Wessels, S. R., & Halperin, J. J. (2023). Pediatric and adult brain death/death by neurologic criteria consensus guideline. *Neurology, 101*(24), 1112–1132. https://doi.org/10.1212/wnl.0000000000207740
Health Canada (2024, July 4). *Canada's food guide*. https://food-guide.canada.ca/en/
Heuveline, P. (2022). Global and national declines in life expectancy: An end-of-2021 assessment. *Population and Development Review, 48*(1), 31–50. https://doi.org/10.1111/padr.12477
Juhl, J., & Routledge, C. (2016). Putting the terror in terror management theory: Evidence that the awareness of death does cause anxiety and undermine psychological well-being. *Current Directions in Psychological Science, 25*(2), 99–103. https://doi.org/10.1177/0963721415625218
Kalish, R. A. (1968). Life and death: Dividing the indivisible. *Social Science and Medicine, 2*(3), 249–259. https://doi.org/10.1016/0037-7856(68)90002-4
Karumathil, A. A., & Tripathi, R. (2022). Culture and attitudes towards euthanasia: An integrative review. *OMEGA - Journal of Death and Dying, 86*(2), 688–720. https://doi.org/10.1177/0030222820984655
Koppes, L. L., Dekker, J. M., Hendriks, H. F., Bouter, L. M., & Heine, R. J. (2005). Moderate alcohol consumption lowers the risk of type 2 diabetes: A meta-analysis of prospective observational studies. *Diabetes Care, 28*(3), 719–725. https://doi.org/10.2337/diacare.28.3.719
Kovaleva, M., Spangler, S., Clevenger, C., & Hepburn, K. (2018). Chronic stress, social isolation, and perceived loneliness in dementia caregivers. *Journal of Psychosocial Nursing & Mental Health Services, 56*(10), 36-43. https://doi.org/10.3928/02793695-20180329-04
Králová, J. (2015). What is social death? *Contemporary Social Science, 10*(3), 235–248, https://doi.org/10.1080/21582041.2015.1114407
Krikorian, A., Maldonado, C., & Pastrana, T. (2020). Patient's perspectives on the notion of a good death: A systematic review of the literature. *Journal of Pain and Symptom Management, 59*(1), 152–164. https://doi.org/10.1016/j.jpainsymman.2019.07.033
Kübler-Ross, E. (1969). *On death and dying*. Macmillan.
Kwon, S., & Park, A. (2022). Understanding user responses to the COVID-19 pandemic on Twitter from a terror management theory perspective: Cultural differences among the US, UK and India. *Computers in Human Behavior, 128*, 107087. https://doi.org/10.1016/j.chb.2021.107087
Lewis, A., Cahn-Fuller, K., & Caplan, A. (2017). Shouldn't dead be dead? The search for a uniform definition of death. *Journal of Law, Medicine & Ethics, 45*(1), 112–128. https://doi.org/10.1177/1073110517703105
Liang, J., Aranda, M. P., Jang, Y., & Wilber, K. (2023). The role of social isolation on mediating depression and anxiety among primary family caregivers of older adults: A two-wave mediation analysis. *International Journal of Behavioral Medicine, 31*, 445–458. https://doi.org/10.1007/s12529-023-10227-5
LoConte, N. K., Brewster, A. M., Kaur, J. S., Merrill, J. K., & Alberg, A. J. (2018). Alcohol and cancer: A statement of the American Society of Clinical Oncology. *Journal of Clinical Oncology, 36*(1), 83–93. https://doi.org/10.1200/JCO.2017.76.1155
Lunney, J. R., Lynn, J. & Hogan, C. (2002). Profiles of older Medicare decedents. *Journal of the American Geriatrics Society, 50*(6), 1108–1112. https://doi.org/10.1046/j.1532-5415.2002.50268.x
MacKenzie, A. R., & Lasota, M. (2020). Bringing life to death: The need for honest, compassionate, and effective end-of-life conversations. *American Society of Clinical Oncology Educational Book, 40*, 476-484. https://doi.org/10.1200/EDBK_279767
Ma-Kellams, C., & Blascovich, J. (2011). Culturally divergent responses to mortality salience. *Psychological Science, 22*(8), 1019–1024. https://doi.org/10.1177/0956797611413935
Martinez, R., Morsch, P., Soliz, P., Hommes, C., Ordunez, P., & Vega, E. (2021). Life expectancy, healthy life expectancy, and burden of disease in older people in the Americas, 1990-2019: A population-based study. *Pan American Journal of Public Health*. https://doi.org/10.26633/RPSP.2021.114
Marziliano, A., Teckie, S., & Diefenbach, M. A. (2020). Alcohol-related head and neck cancer: Summary of the literature. *Head and Neck, 42*(4), 732–738. https://doi.org/10.1002/hed.26023
Menendez, D., Hernandez, I. G., & Rosengren, K. S. (2020). Children's emerging understanding of death. *Child Development Perspectives, 14*(1), 55–60. https://doi.org/10.1111/cdep.12357
Miller, S. M. (1995). Monitoring versus blunting styles of coping with cancer influence the information patients want and need about their disease. Implications for cancer screening and management. *Cancer, 76*(2), 167–177. https://doi.org/10.1002/1097-0142(19950715)76:2<167::aid-cncr2820760203>3.0.co;2-k
Mohanty, A. (2010). Medical rights for same-sex couples and rainbow families. *University of Richmond*. https://scholarship.richmond.edu/cgi/viewcontent.cgi?article=1044&context=law-student-publications
Murray, E. A. (2010). *Death: Corpses, cadavers, and other grave matters*. Twenty-First Century Books.
Nadeem, M., Ashraf, F., & Hussain, I. (2017). Facing the evitable and the inevitable: Perspectives of good death amongst Muslim patients and health care providers in Pakistan. *Pakistan Armed Forces Medical Journal, 67*(2), 312–316. https://doi.org/10.51253/pafmj.v67i2.410
Neimeyer, R. A., Testoni, I., Ronconi, L., Biancalani, G., Antonellini, M., & Dal Corso, L. (2021). The integration of Stressful Life Experiences Scale and the Inventory of Complicated Spiritual Grief: The Italian validation of two instruments for meaning-focused assessments of bereavement. *Behavioral Sciences, 11*(11), 149. https://doi.org/10.3390/bs11110149
Nguyen, D. (2020). Does the Uniform Determination of Death Act need to be revised? *The Linacre Quarterly, 87*(3), 317–333. https://doi.org/10.1177/0024363920926018
Nichols, S., Strohminger, N., Rai, A., & Garfield, J. (2018). Death and the self. *Cognitive Science, 42*(S1), 314–332. https://doi.org/10.1111/cogs.12590
Nikas, N. T., Bordlee, D. C., & Moreira, M. (2016). Determination of death and the Dead Donor Rule: A survey of the current law on brain death. *The Journal of Medicine and Philosophy, 41*(3), 237–256. https://doi.org/10.1093/jmp/jhw002
Noakes, T. D., & Windt, J. (2017). Evidence that supports the prescription of low-carbohydrate high-fat diets: A narrative review. *British Journal of Sports Medicine, 51*(2), 133–139. https://doi.org/10.1136/bjsports-2016-096491
Noble, N., Paul, C., Turon, H., Oldmeadow, C. (2015). Which modifiable health risk behaviours are related? A systematic review of the clustering of smoking, nutrition, alcohol and physical activity ('SNAP') health risk factors. *Preventive Medicine, 81*, 16–41. https://doi.org/10.1016/j.ypmed.2015.07.003
Omelianchuk, A., Bernat, J., Caplan, A., Greer, D., Lazaridis, C., Lewis, A., Pope, T., Ross, L. F., & Magnus, D. (2022). Revise the Uniform Determination of Death Act to align the law with practice through neurorespiratory criteria. *Neurology, 98*(13), 532–536. https://doi.org/10.1212/WNL.0000000000200024
Otsubo, K., & Yamaguchi, H. (2023). No significant effect of mortality salience on unconscious ethnic bias among the Japanese. *BMC Research Notes, 16*(1), 91. https://doi.org/10.1186/s13104-023-06360-9
Panna, M. S. A. (2021). Determination of death: Ethical and biomedical update with international consensus. In P. A. Clark (Ed.), *Bioethical issues in healthcare*. IntechOpen. https://doi.org/ 10.5772/intechopen.100604
Pao, M., & Mahoney, M. R. (2018). "Will you remember me?": Talking with adolescents about death and dying. *Child and Adolescent Psychiatric Clinics of North America, 27*(4), 511–526. https://doi.org/10.1016/j.chc.2018.05.001
Parish, D. C., Goyal, H., & Dane, F. C. (2018). Mechanism of death: There's more to it than sudden cardiac arrest. *Journal of Thoracic Disease, 10*(5), 3081–3087. https://doi.org/10.21037/jtd.2018.04.113
Park, S., Ahn, J., Kim, N.-S., & Lee, B.-K. (2017). High carbohydrate diets are positively associated with the risk of metabolic syndrome irrespective to fatty acid composition in women: The KNHANES 2007–2014. *International Journal of Food Sciences and Nutrition, 68*(4), 479–487. https://doi.org/10.1080/09637486.2016.1252318
President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research (1981). *Defining death: Medical, legal and ethical issues in the determination of death*. President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research.
Raju, B., & Reddy, N. K. (2018). Perspectives of glioblastoma patients on death and dying: A qualitative study. *Indian Journal of Palliative Care, 24*(3), 320–324. https://doi.org/10.4103/ijpc.ijpc_171_17
Rodman, A., & Breu, A. C. (2022). The last breath: Historical controversies surrounding determination of cardiopulmonary death. *Chest, 161*(2), 514–518. https://doi.org/10.1016/j.chest.2021.08.006
Rohmadi, R., Fauzan, F., & Jafar, W. A. (2022). Positive and negative impacts of poligamy in the life of Muslim family. *Madania: Jurnal Kajian Keislaman, 26*(1), 75-84. http://dx.doi.org/10.29300/madania.v26i1.6483
Rubin, M. (2018). Fear of self-annihilation and existential uncertainty as predictors of worldview defense: Comparing terror management and uncertainty theories. *The Journal of Social Psychology, 158*(3), 298–308. https://doi.org/10.1080/00224545.2017.1341375

Rumgay, H., Shield, K., Charvat, H., Ferrari, P., Sornpaisarn, B., Obot, I., Islami, F., Lemmens, V. E. P. P., Rehm, J., & Soerjomataram, I. (2021). Global burden of cancer in 2020 attributable to alcohol consumption: A population-based study. *The Lancet Oncology, 22*(8), 1071–1080. https://doi.org/10.1016/S1470-2045(21)00279-5
Schweda, M., Schicktanz, S., Raz, A., & Silvers, A. (2017). Beyond cultural stereotyping: Views on end-of-life decision making among religious and secular persons in the USA, Germany, and Israel. *BMC Medical Ethics, 18*, 1–11. https://doi.org/10.1186/s12910-017-0170-4
Searight, H. R. (2022). Cross-cultural issues in end-of-life care: A selective overview of recent research and ethical perspectives. In J. A. Jaworski (Ed.), *Advances in sociology research* (vol. 38), pp. 139–161. Nova Science Publishers, Inc. https://www.researchgate.net/profile/Konstantinos-Malagas-2/publication/360312976_Organizational_Culture_Types_and_Critical_Success_Factors_for_Organizational_Excellence/links/626fb2222f9ccf58eb25ff19/Organizational-Culture-Types-and-Critical-Success-Factors-for-Organizational-Excellence.pdf#page=153
Shooshtari, S., Menec, V., Swift, A., & Tate, R. (2020). Exploring ethno-cultural variations in how older Canadians define healthy aging: The Canadian Longitudinal Study on Aging (CLSA). *Journal of Aging Studies, 52*, Article 100834. https://doi.org/10.1016/j.jaging.2020.100834
Tang, S. T., Liu, L. N., Lin, K.-C., Chung, J.-H., Hsieh, C.-H., Chou, W.-C., Su, P.-J. (2014). Trajectories of the multidimensional dying experience for terminally ill cancer patients. *Journal of Pain and Symptom Management, 48*(5), 863–874. https://doi.org/10.1016/j.jpainsymman.2014.01.011
Terunuma, Y., & Mathis, B. J. (2021). Cultural sensitivity in brain death determination: A necessity in end-of-life decisions in Japan. *BMC Medical Ethics, 22*(1), Article 58. https://doi.org/10.1186/s12910-021-00626-2
Testoni, I., Bortolotti, C., Pompele, S., Ronconi, L., Baracco, G., & Orkibi, H. (2020). A challenge for palliative psychology: Freedom of choice at the end of life among the attitudes of physicians and nurses. *Behavioral Sciences, 10*(10), Article 160. https://doi.org/10.3390/bs10100160
Theill, N., Hülür, G., Riese, F., & Wolf, H. (2018). Cognitive change at the end of life in nursing home residents: Differential trajectories of terminal decline. *Gerontology, 65*(1), 57–67. https://doi.org/10.1159/000490614
United States Department of Agriculture, United States Department of Health and Human Services. (2020). *Dietary guidelines for Americans, 2020–2025* (9th ed.). https://www.dietaryguidelines.gov/
Ushe, U. M. (2017). God, divinities and ancestors in African traditional religious thought. *IGWEBUIKE: An African Journal of Arts and Humanities, 3*(4), 154–179. https://www.acjol.org/index.php/iaajah/article/view/2485/2450
Vázquez-Sánchez, J. M., Fernández-Alcántara, M., García-Caro, M. P., Cabañero-Martínez, M. J., Martí-García, C., & Montoya-Juárez, R. (2019). The concept of death in children aged from 9 to 11 years: Evidence through inductive and deductive analysis of drawings. *Death Studies, 43*(8), 467–477. https://doi.org/10.1080/07481187.2018.1480545
Walker, A. C. (2019). Death and dying in American Indian cultures. In H. Selin & R. M. Rakoff (Eds.), *Death across cultures* (pp. 335–349). Springer. https://doi.org/10.1007/978-3-030-18826-9_20
Walker, J., Dotchin, C., Breckons, M., Fisher, E., Lyimo, G., Mkenda, S., Walker, R., Urasa, S., Rogathi, J., & Spector, A. (2023). Patient and caregiver experiences of living with dementia in Tanzania. *Dementia, 22*(8), 1900–1920. https://doi.org/10.1177/14713012231204784
Walter, T. (2003). Historical and cultural variants on the good death. *BMJ, 327*, Article 218. https://doi.org/10.1136/bmj.327.7408.218
WISQARS Leading Causes of Death Visualization Tool. (2022). Leading causes of death. *Centers for Disease Control and Prevention.*
World Health Organization (2019). *World health statistics 2019: Monitoring health for the SDGs, sustainable development goals.* https://apps.who.int/iris/bitstream/handle/10665/324835/9789241565707-eng.pdf
World Health Organization (2020, December 9). *The top 10 causes of death.* https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death
World Health Organization (2021, May 20). *The true death toll of COVID-19: Estimating global excess mortality.* https://www.who.int/data/stories/the-true-death-toll-of-covid-19-estimating-global-excess-mortality
Xu, J. Q., Murphy, S. L., Kochanek, K. D., & Arias, E. (2022). *Mortality in the United States, 2021* (NCHS Data Brief, No. 456). National Center for Health Statistics. https://dx.doi.org/10.15620/cdc:122516
Yang, Q., & Miller, G. (2015). East–West differences in perception of brain death. *Journal of Bioethical Inquiry, 12*, 211–225. https://doi.org/10.1007/s11673-014-9564-x
Yang, S., & Park, S. (2017). A sociocultural approach to children's perceptions of death and loss. *OMEGA – Journal of Death and Dying, 76*(1), 53–77. https://doi.org/10.1177/0030222817693138
Zhang, H., Miao, L., Gao, F., Yang, Y., & Wang, Y. (2023). Assisted dying: More attention should be paid to the epistemic asset of personal experience. *The American Journal of Bioethics, 23*(1), 46-49. https://doi.org/10.1080/15265161.2022.2146912

17.2 End-of-Life Care

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Describe various end-of-life care options
- Explain the typical decisions dying individuals and their families face
- List the moral and ethical considerations that arise at the end of life

Clara is seventy-five years old and has moved in with her adult son Hien and his partner. She's nearing the end of four years living with lung cancer and no longer wishes to receive treatment. She wants to be in a comfortable and peaceful environment to enjoy the company of friends and family for as long as possible. This is a difficult mental shift for Hien and his siblings, who have been focused on their mother's treatment to prolong her life. But they know they now need to discuss challenging questions to best understand their mother's wishes and determine how to act on those, and that doing so can cause family strife: Who makes the final decisions about their mother's care? How far should her doctors go to keep her alive and pain-free? What should they do if she indicates she can no longer bear her suffering? When the end comes, what will happen to her possessions, and how should her family remember and celebrate her life in accordance with her wishes?

As Clara, Hien, and their family are learning, the end of life can be complicated by a variety of care options to choose from and decisions to be made. In addition, those who are dying—and their loved ones and medical teams—must think through ethical decisions that often call upon cultural and religious values.

Care Options

While many people say they want to die at home, asleep in their own beds (Fleming et al., 2016; Sanderson et al., 2019), death can occur in unpredictable ways, like accidents and heart attacks. In contrast, when a person may be facing death after a period of illness or decline, the dying person and/or their loved ones may be able to make some choices about what care they receive and where.

Hospital Care

Worldwide, approximately 54 percent of deaths occur in hospitals (Broad et al., 2013), although rates vary by country; for example, the Netherlands and Japan record 23.9 percent and 68.3 percent hospital deaths, respectively (Wilson et al., 2022). There are both practical and cultural reasons for these variations. In Japan, community-based long-term care facilities often have long waiting lists (Wammes et al., 2022), and the cultural value of venerating parents dictates that family members care for elderly relatives themselves and not place them in nursing homes (Ng & Indran, 2021). In the United States, about 30 percent of deaths occur in the hospital, compared to about 31 percent at home and about 21 percent in a long-term care setting such as a nursing home; 7 percent occur in hospice settings and the remainder in other environments (Cross & Warraich, 2019).

Hospitals are facilities designed to treat illnesses and injuries, rather than places designated to support the process of death. The priority of the medical staff is typically to save lives, and death is often regarded as a failure (Crimmins et al., 2021; Schallmo et al., 2019). Practitioners may therefore recommend aggressive diagnostic or treatment procedures that, if not aligned with a dying person's wishes, can be unhelpful at best and painful at worst (Cardona-Morrell et al., 2016; Walling et al., 2010). Nurses sometimes report feeling insufficiently trained to handle end-of-life care (Chan et al., 2020), and patients and their families sometimes sense that uncertainty (Hansen et al., 2020). Family members also report that medical staff don't always provide clear communication about the patient's condition or prognosis (Carey et al., 2018; Dose et al., 2015; Hansen et al., 2020; Heckel et al., 2020). Parents of children who die in hospitals, particularly from long-term or chronic conditions like cancer, report stronger grief symptoms, anxiety, depression, and stress than those whose children died at home (Morris et al., 2019).

Hospitals are often very large structures that run on schedules and control the number and age of visitors, so patients may not be able to be with loved ones or surrounded by familiar comforts of home (Iverson et al., 2014). These factors can render a hospital death lonely and impersonal (Figure 17.11). These findings were exacerbated during the quarantine and social isolation protocols enacted during the COVID-19 pandemic. For instance, during the first wave of the COVID-19 pandemic in Spain, a frequent result of preventive measures and patient isolation protocols enacted by authorities was that people died alone (Consuegra-Fernández & Fernandez-Trujillo, 2020). Health-care professionals tried to replace the physical presence of family members with creative options like video calls, but no solutions were considered adequate (Wakam et al., 2020). One consequence of the way hospitals function is that when hospitals are at capacity due to a pandemic or other health crisis, the grieving process of dying individuals and their loved ones may not be prioritized due to the more pressing health crisis.

FIGURE 17.11 Being in a hospital can be a lonely and impersonal experience. (credit: "Hosp_1013" by Justin Taylor/Flickr, CC BY 2.0)

Dying at Home

Worldwide, about 53 percent of deaths occur in the home, more commonly in lower-income countries and countries in southeast Asia and sub-Saharan Africa (Adair, 2021). The frequency of home death is influenced by factors like the availability of hospitals and long-term care facilities, cultural views about who bears responsibility for caring for sick family members, and the generally lower financial cost of in-home care (Ng & Indran, 2021; Wachterman et al., 2022; Wammes et al., 2022). In the United States, the percentage of people dying at home increased from 23.8 percent to 30.7 percent between 2003 and 2017 (Cross & Warraich, 2019). Similarly, a global study noted that the percentage of home deaths rose from 30.1 percent in 2012–2013 to 30.9 percent in 2018–2019, and then further to 32.2 percent during the pandemic (2020–2021).

Medical services provided in the patient's residence, also known as **home care**, can be given by family or friends, paid professionals, or a combination of the two, and it may be viewed as more desirable than a hospital or nursing home death (Figure 17.12). A patient may get much more individual attention at home than in a hospital or nursing home, and loved ones may be able to provide it, possibly reducing distress. People dying at home report less physical discomfort and higher quality of care than people dying in hospitals (Pinto et al., 2023; Teno, 2004; Wright, 2010). Schedules and rules about visitors are often more negotiable, and the general surroundings are likely to be familiar and more personal than in a hospital setting.

FIGURE 17.12 A person receiving home care may be able to have more visitors and spend more time with them than someone in a hospital. (credit: "Pvt. Joe Diaz of the Puerto Rico Army National Guard assists a person to get up at Barceloneta, Puerto Rico, March 9, 2021" by The National Guard/Flickr, CC BY 2.0)

However, a home death isn't always an ideal option for everyone. A small home may not have space for a hospital bed. Family members or friends may live too far away, have other obligations, or be unable (or unwilling) to take on the demands of caregiving for a dying loved one. Although professionals may be available to provide care in the home, cost and cultural norms about privacy may make this avenue unsuitable for some. Additional factors that could make people choose alternatives other than home include administering certain medications, a perception that specialized care is not an at-home option, and feelings of fear, frustration, and isolation at home (Pinto et al., 2023).

Hospice and Palliative Care

Another type of care, **hospice care**, may be provided to people whose conditions are uncurable or whose treatment would produce more suffering than it relieves. Part of the goal of hospice is maintaining **quality of life**, a person's perception of how good their life is in the context of their values, goals, and cultural norms. Hospice care includes managing physical symptoms, including pain, as well as addressing the spiritual and emotional needs of the patient and their loved ones (Figure 17.13). It can be provided in a special facility, in the home, or even sometimes in a hospital setting. A doctor may suggest hospice care if the patient is expected to live for fewer than six months. The decision to enter hospice care is typically made by the patient and their doctor together, sometimes with the patient's family (CaringInfo, 2023).

FIGURE 17.13 Hospice care attempts to meet the psychosocial needs of patients as well as medical needs. This type of care typically helps not only the patient, but also their loved ones, through the process of dying. (credit: "Abhimanyu with Jethu" by Anuradha Sengupta/Flickr, CC BY 2.0)

The hospice movement began in England in 1967. It was started by Cicely Saunders, whose combined training in nursing, social work, and medicine inspired her to use her learning to alleviate pain and suffering at the end of life. Florence Wald, a nurse and supporter of Saunders' work, founded the first U.S. hospice facility in Connecticut in 1974 (Buck, 2011; Miličević, 2002; von Gunten & Ryndes, 2005). In the 1980s, Medicare (the U.S. federal government's health insurance program for people age sixty-five and older) began paying for many of the costs of hospice care, making it more accessible to a wider range of people (Connor, 2008). The percentage of terminally ill people dying in hospice care in the United States increased from 0.2% to 8.3% from 2003 to 2017, suggesting its wider use (Cross & Warraich, 2019).

Care typically provided in hospice is **palliative care**, which relieves pain and provides comfort but doesn't attempt to cure the patient. However, hospice care and palliative care aren't the same thing. Hospice care is specifically for people with a terminal illness who are expected to live fewer than six months, while palliative care can be given to anyone with a chronic condition, regardless of prognosis (Casey, 2019). Palliative care can be provided alongside care that attempts to cure the patient, and it isn't provided only in hospice settings. However, a person in hospice care wouldn't receive treatment meant to extend their life or stop the illness, such as chemotherapy.

In the United States, the number of people using palliative care has increased since the early 2000s; by 2014, nearly 70 percent of all hospitals had palliative care programs (Dumanovsky, et al., 2016). Palliative care is becoming a prevalent option for children, including in Europe (Arias Casais et al., 2020). The need is anticipated to increase by as much as 47 percent by the year 2040, mostly due to the growing elderly population and the prevalence of medical conditions associated with aging, especially cancer and dementia (Etkind et al., 2017).

End-of Life Decisions

People also need to make other decisions regarding the end of life. For example, who will take care of the deceased person's surviving loved ones, including pets? Accounts for services like phone and electricity may need to be canceled or put in someone else's name. Assets like property, money, or special belongings may need to be distributed or their ownership transferred. Ideally, decisions about these issues will be made in

conversation with loved ones to ensure the dying person's wishes are honored. In many cases, last wishes also require legal documentation.

Most such documents are versions of an **advance directive**, a legal form that specifies a person's wishes if the person cannot communicate them because they are unconscious or cognitively impaired (National Institute on Aging, 2022). The matters addressed in advance directives don't just apply to older adults or to people with a terminal diagnosis. Death can occur at any point in the lifespan, sometimes suddenly. Although it can be distressing to think about the scenarios presented in advance directives, it's helpful to do so before a crisis occurs. There are different policies regarding advance directives both within and outside of the United States, so getting location-specific information is important for anyone preparing these documents.

LINK TO LEARNING

These links contain information and resources to address a variety of questions related to advance directives, including definitions of terms, forms, and (for U.S. residents) state-specific guidelines.

- Learn more about advance directives on the NIA Advance Care Planning (https://openstax.org/r/104NIAAdvCarPlng) website.
- The AARP website gives state-specific-information (https://openstax.org/r/104AdvDirective) on how to create advance directives.
- CaringInfo.org, a program of the National Hospice and Palliative Care Organization, has a detailed website on how to create (https://openstax.org/r/104CreateAdvDir) an advance directive.

Wills

A **will** is a legal document specifying how to handle a person's possessions, financial assets, real estate, and/or dependents after death. In some cultures, a will may even cover ideas. For example, some Jewish people make an "ethical will" to pass down their life lessons and values (Reischer & Beverley, 2019). A will may also specify what the person wants done with their body (e.g., burial, cremation, donation to science) and the type of funeral or memorial arrangements they would like. In the United States, anyone considered a legal adult, which is eighteen or older in most states, can make a will (American Bar Association, 2013).

A will names an **executor**, a person responsible for fulfilling the conditions in the will such as by making charitable donations and giving possessions to heirs. The executor is usually a family member or trusted friend. After a person dies, the executor may need to file the person's will and a copy of the death certificate with the **probate court**, which oversees matters such as the distribution of property and the assignment of a legal guardian for any minor children. The court then gives the executor the authority to enact the terms in the will and fulfill other duties, such as selling the deceased person's house to pay off debts. This is not necessary for all wills, and the rules may be different between states.

Sometimes people assume that a will is unnecessary because family members will agree about how to divide up the deceased person's assets, but in fact they may disagree. If a person dies without a will, also called dying **intestate**, no one can access their assets until the probate court decides what should be done with them and who has a legitimate claim to them. This can take several months and means that family members may be cut off from financial assets such as bank accounts and credit cards if they aren't already recognized as users on those accounts.

INTERSECTIONS AND CONTEXTS

Cultural Differences in Preference for End-of-life Care

Cultural factors may influence feelings and beliefs about end-of-life care. Latine and Black Christians, for example, tend to have a strong belief in fatalism, the idea that life and death are God's will (DeSouza et al., 2020;

Jennings et al., 2018; LoPresti et al., 2016; Soto-Perez-de-Celis et al., 2017). This belief may cause people to reject hospice care, euthanasia, and advance directives, since whatever happens is "meant to happen." Similarly, mistrust of the health-care system due to a long history of racist practices may make people of color suspicious of end-of-life care (Allen et al., 2016; Centers for Disease Control and Prevention, 2022; Searight, 2022).

People of color are more likely to face barriers like lack of insurance, limited income, and lack of knowledge about available options (Allen et al., 2016; LoPresti et al., 2016). In some cultural groups, discussing death is taboo, and families may deliberately choose to withhold a terminal diagnosis from the patient (Allen et al., 2016; Cheng et al., 2020; Jennings et al., 2018; Searight, 2022; Soto-Perez-de-Celis et al., 2017).

Black, Latine, and Asian families are also more likely to prefer a family-centered approach to medical decision-making and caregiving (Allen et al., 2016; Cheng et al., 2020; DeSouza et al., 2020; Searight, 2022; Soto-Perez-de-Celis et al., 2017). They may assume they don't need to talk about end-of-life issues because everyone should know what the patient wants; however, this isn't always the case (Cheng et al., 2020; DeSouza et al., 2020). The Japanese concept of *ishin-denshin*, an unspoken form of mutual understanding, is consistent with this assumption (Cheng et al., 2020). Health-care providers may similarly seek the family's opinion instead of the patient's. In some countries, such as Taiwan, physicians are forbidden from allowing patients to make decisions regarding their own care (Cheng et al., 2020).

Living Will

A **living will** is a legal document that specifies what types of life-sustaining medical treatment, such as dialysis or feeding tubes, a person does or doesn't want. It is used in situations where a person is unable to express their wishes themselves. For example, the document can specify particular pain management preferences, or whether the individual wishes to be intubated if they are no longer able to eat or drink.

Do Not Resuscitate (DNR), Do Not Intubate (DNI), and Do Not Hospitalize (DNH) Orders

The abbreviation "DNR" stands for "**do not resuscitate (DNR)**." It means that if a person's heart stops beating or if they stop breathing, they don't want CPR or other lifesaving measures performed on them. A DNR is similar to a living will but addresses only the issue of resuscitation if the heart stops. Without documentation that a person doesn't want a particular treatment, medical personnel are required by law to attempt life-saving measures (Figure 17.14). A DNR order is usually kept in a patient's medical file, but it may not be accessible to everyone when needed, such as paramedics or emergency room staff. Some people have DNR bracelets they always wear to make their wishes known.

FIGURE 17.14 A person's living will and similar directives can ensure their wishes for care are implemented in

medical settings. (credit: modification of work “Peter – Initial Chemo” by Beth Scupham/Flickr, CC BY 2.0)

A related directive, a “**do not intubate (DNI)**” order, prevents health-care providers from inserting breathing tubes into a patient’s nose or mouth. This may be requested instead of or in addition to a DNR order.

Finally, a “**do not hospitalize (DNH)**” order prohibits admitting an individual to a hospital. It is usually used in long-term care settings like nursing homes and is meant to prevent a person from receiving unwanted aggressive medical care if their chances of recovery are low.

Why do people choose these orders? Hospital patients with DNR orders identify several reasons, including a desire to avoid unnecessarily prolonging life and suffering, a wish to avoid burdening loved ones and health-care workers, and a perception of resuscitation as a painful, violent treatment that’s ultimately unlikely to succeed (Downar et al., 2011).

Health-Care Proxy

The term **health-care proxy**, also called a **durable power of attorney for health care**, is a document that legally authorizes a person to make health-care decisions for someone else. The authorized person, is a trusted family member or friend chosen by the individual.

It may seem unnecessary to have both a living will and a health-care proxy. However, a health-care proxy can cover situations not identified in the living will, which applies only to life-sustaining treatment. For example, a person with Alzheimer’s disease who needs surgery for a broken arm may not be able to consent to treatment due to cognitive impairment. Because this situation isn’t life-threatening, it’s not covered by a living will, but a health-care proxy could consent to the surgery.

Not having a designated health-care proxy can result in family conflicts about who is authorized to make health-care decisions. Even if a person has advance directives, a family may experience distress or even disagreement about decisions to withdraw or withhold treatment. End-of-life decisions sometimes have to be made on short notice. Discussing the patient’s wishes beforehand may reduce the family’s distress somewhat, but not completely (Iverson et al., 2014; Sulmasy et al., 2017).

Organ Donation

Another end-of-life matter is organ donation. According to the United States Health Resources and Services Administration Division of Transplantation, more than 103,000 people are on the national organ transplant waiting list, most of whom need a kidney, and seventeen people die each day for lack of an available transplant (Health Resources & Services Administration, 2023). Many U.S. states allow people to designate on their driver’s license whether they want to be an organ donor when they pass away (Figure 17.15). If a deceased person doesn’t have a driver’s license or hasn’t expressed a preference, their family members may need to make this decision at the time of death.

FIGURE 17.15 An organ donor recipient has a second chance at a healthy life. (credit: "Sheila dixit signing organ donation card" by "Castroregu"/Wikimedia Commons, CC0 1.0)

If a person doesn't have advance directives, family members may need to presume what they would want and might make decisions that contradict what they would have preferred. Even if the person has told others what they want, their wishes may not be followed if they aren't stated in formal legal documents. Regardless of individual feelings about end-of-life issues, making these decisions and preparing legal documents in advance can alleviate challenging decision-making for the loved ones of a dying individual.

LIFE HACKS

Talking About End-of-Life Issues

Discussing end-of-life issues with family members can be distressing, and people may not feel the need if things are going well. However, we don't always make good decisions during a crisis. And if someone is unable to express their wishes, decisions will fall on family members who may not be sure about or agree about what to do.

Once a person reaches adulthood, their parents or guardians no longer have the right to make health-care decisions for them. They may also disagree about treatment options, and if relationships are strained, an adult child may not want their parents to make decisions for them at all. For these reasons, anyone of legal age should designate a health-care proxy and prepare a will and living will (Mayo Clinic Staff, 2022; National Institute on Aging, 2022).

Here are some practical suggestions for getting started, both for expressing your wishes and for learning about what your family members might want for themselves.

A natural opener might be, "In my lifespan development class, we're learning about death, and that got me thinking about some things." You can move on to, "I just finished reading about living wills, and now I'm wondering if you have a living will or anything like that." Or, "The textbook encouraged us to talk with our families about end-of-life issues; would you be willing to have that conversation with me?"

If someone you know or a recent news story dealt with end-of-life issues, you can say, "I was thinking about what happened to _____ after they were in that accident and their family had to decide whether to keep them on life support," or "Things are still a big mess in _____'s family because _____ didn't have a will and now they have to wait for probate court to decide how to divide up the estate." Examples about other people might create openings in conversations that are more comfortable than asking the person directly about their own wishes and plans.

Once you're able to have a conversation, be sure to include both practical concerns (types of medical treatment, who makes decisions) and more philosophical concerns (what's important in life, how much pain or discomfort is

tolerable). Be sure to include your own views and wishes as well as asking your loved ones about theirs. You don't need to discuss everything at once. Most people need time to think and decide about these things.

Talking about end-of-life wishes isn't a one-time conversation. People's desires or circumstances may change, and legal documents like health-care proxy forms typically require several conversations and legal consultation. You can express your own concerns, too: "I'm worried I won't know what to do if something happens to you," or "If you don't have a DNR order, health-care workers are legally required to try to resuscitate you." You can also offer to discuss your own wishes first. For instance, "I don't want you to wonder about my wishes, so that's why I want to talk about this."

One final point: Once you and your loved ones have completed the legal documents you decide are necessary, make sure several people know where they are so they can be accessed when needed.

The Ethics of Dying

The circumstances under which death occurs may have ethical aspects. Medical technology has advanced to the point where we can keep people alive for longer periods of time. However, a longer life doesn't necessarily mean a better quality of life. In some cases, life-sustaining treatment may come with significant consequences, such as requiring painful medical procedures or being reliant on medical interventions for eating and breathing. The financial cost of such treatment may be prohibitive for many people. If a person needs significant medical treatment to be kept alive, the risks and benefits need to be clearly conveyed to them, family members, and other loved ones or potential caregivers.

One ethical question is whether to limit care for people who have little or no chance of recovery. Such **rationing of care** relies on the premise that people who have a chance of recovery should receive priority in the use of health-care resources. This issue received increased attention during the COVID-19 pandemic because older adults had disproportionately more severe infections than the general population and the health-care system was overwhelmed (Jecker, 2022). The ethical aspects of this scenario are obvious and serious; the United States Department of Health and Human Services has conducted investigations to ensure that patients' civil rights aren't being violated if states do pursue explore rationing of care (Fink, 2020).

Similarly, if death is inevitable and the patient is in a great deal of pain, questions may arise about whether they should be allowed to end their life, and what role, if any, medical personnel should play in that process.

Euthanasia

Ending life in a manner to relieve pain and suffering is called **euthanasia**. There are two types of euthanasia, passive and active. In **passive euthanasia**, the patient chooses to withdraw life-sustaining treatment, such as dialysis or a feeding tube, or not start such treatment, such as by following a DNR order. In **active euthanasia**, an outside agent like a lethal dose of a drug is given to cause death.

Passive and active euthanasia differ in a fundamental way that has significant legal implications. In passive euthanasia, the patient's cause of death is the medical condition requiring them to receive life-sustaining treatment. For example, if someone has amyotrophic lateral sclerosis (ALS, also called "Lou Gehrig's disease") and can't breathe without a ventilator, taking away the ventilator will result in their death, but the cause of death is ALS. If a person with ALS is given a lethal amount of a drug, however, then the cause of death is the overdose. Passive euthanasia is legal in all fifty states and the District of Columbia (Srivastava, 2014); however, active euthanasia is illegal.

Assisted Suicide

Related to euthanasia is **assisted suicide**, also called medical aid in dying (MAID), in which a doctor prescribes medication knowing the patient intends to use it to end their life. The primary difference between active euthanasia and assisted suicide is that in assisted suicide, the patient self-administers the lethal treatment,

while in active euthanasia, another person does so (Emanuel et al., 2016).

Medical professionals disagree about the ethicality of assisted suicide; some feel it violates the ethical principle of doing no harm, while others feel it's consistent with the need to relieve suffering (American Academy of Hospice and Palliative Medicine, 2016; American Medical Association, 2022, Opinion 5.7; Lawry, 2023). As of 2023, assisted suicide/MAID is legal in the District of Columbia and ten states: California, Colorado, Hawaii, Maine, Montana, New Jersey, New Mexico, Oregon, Vermont, and Washington (Americans United for Life, 2023; ProCon.org, 2023; Death with Dignity, 2023). It's also legal in Canada and several countries in Europe, but illegal in most other places.

A highly publicized case of assisted suicide occurred in 2014 when activist Brittany Maynard was diagnosed with a brain tumor. She underwent several operations, including removal of part of her temporal lobe, but the tumor came back. After being told she had only a few months to live, Maynard decided to pursue assisted suicide/MAID. Her home state of California didn't allow this at the time, so she and her husband moved to Oregon to take advantage of its MAID law. Maynard wrote about her experience in an editorial for CNN, noting that she had to take all the usual steps to establish residency in Oregon such as getting a new driver's license, and her husband had to put his job on hold while they moved. She emphasized that she wasn't suicidal but wanted to die on her own terms (Maynard, 2014). Her husband echoed this wish in a later editorial:

> To be clear, Brittany, and any terminally ill individual in her situation, is not choosing between living and dying. The brain tumor was ending Brittany's life. The option of living was no longer available to her. She was only choosing between two different *methods of dying*. One method would be gentle, peaceful. The other would result in being tortured to death by the increasingly intense symptoms she was already experiencing: unrelenting pain, nausea, sleep deprivation, seizures, and impending blindness and paralysis. Those were her reasons for moving to Oregon to have this *option* available to her. (Diaz, 2019, pp. 8–9)

Brittany Maynard ended her life on November 1, 2014.

References

Adair, T. (2021). Who dies where? Estimating the percentage of deaths that occur at home. *BMJ Global Health, 6*(9), Article e006766. https://doi.org/10.1136/bmjgh-2021-006766

Allen, R. S., Noh, H., Beck, L. N., & Smith, L. J. (2016). Caring for individuals near the end of life. In L. D. Burgio et al. (Eds.), *The spectrum of family caregiving for adults and elders with chronic illness* (pp. 142–172). Oxford. https://doi.org/10.1093/med:psych/9780199828036.001.0001

American Academy of Hospice and Palliative Medicine. (2016, June 24). *Statement on physician-assisted dying*. https://aahpm.org/positions/pad

American Bar Association. (2013, March 18). *Wills and estates*. https://www.americanbar.org/groups/public_education/resources/law_issues_for_consumers/will_validate/

American Medical Association. (2022). *Code of medical ethics*. https://code-medical-ethics.ama-assn.org/ethics-opinions/physician-assisted-suicide

Americans United for Life (2023, June 29). *Assisted suicide*. https://aul.org/physician-assisted-suicide/

Arias-Casais, N., López-Fidalgo, J., Garralda, E., Pons, J. J., Rhee, J. Y., Lukas, R., de Lima, L., & Centeno, C. (2020). Trends analysis of specialized palliative care services in 51 countries of the WHO European region in the last 14 years. *Palliative Medicine, 34*(8), 1044-1056. https://doi.org/10.1177/0269216320931341

Broad, J. B., Gott, M., Kim, H., Boyd, M., Chen, H., & Connolly, M. J. (2013). Where do people die? An international comparison of the percentage of deaths occurring in hospital and residential aged care settings in 45 populations, using published and available statistics. *International Journal of Public Health, 58*(2), 257–267. https://doi.org/10.1007/s00038-012-0394-5

Buck J. (2011). Policy and the reformation of hospice: Lessons from the past for the future of palliative care. *Journal of Hospice and Palliative Nursing, 13*(6), S35–S43. https://doi.org/10.1097/NJH.0b013e3182331160

Cardona-Morrell, M., Kim, J., Turner, R. M., Anstey, M., Mitchell, I. A., & Hillman, K. (2016). Non-beneficial treatments in hospital at the end of life: A systematic review on extent of the problem. *International Journal for Quality in Health Care, 28*(4), 456–469. https://doi.org/10.1093/intqhc/mzw060

Carey, E. C., Dose, A. M., Humeniuk, K. M., Kuan, Y. C., Hicks, A. D., Ottenberg, A. L., Tilburt, J. C., & Koenig, B. (2018). The experience of hospital death: Assessing the quality of care at an academic medical center. *American Journal of Hospice and Palliative Care, 35*(2), 189–197. https://doi.org/10.1177/1049909116689547

CaringInfo (2023). *Types of care*. National Hospice and Palliative Care Organization. https://www.caringinfo.org/types-of-care/

Casey, D. (2019). Hospice and palliative care: What's the difference*? Medsurg Nursing, 28*(3), 196–197. https://www.proquest.com/scholarly-journals/hospice-palliative-care-whats-difference/docview/2242625554/se-2

Centers for Disease Control and Prevention. (2022). *The U.S. public health service untreated syphilis study at Tuskegee*. https://www.cdc.gov/tuskegee/timeline.htm

Chan, C. W. H., Chow, M. C. M., Chan, S., Sanson-Fisher, R., Waller, A., Lai, T. T. K., & Kwan, C. W. M. (2020). Nurses' perceptions of and barriers to the optimal end-of-life care in hospitals: A cross-sectional study. *Journal of Clinical Nursing, 29*(7–8), 1209–1219. https://doi.org/10.1111/jocn.15160

Cheng, S.-Y., Lin, C. P., Chan, H. Y.-L., Martina, D., Mori, M., Kim, S.-H., & Ng, R. (2020). Advance care planning in Asian culture. *Japanese Journal of Clinical Oncology, 50*(9), 976–989. https://doi.org/10.1093/jjco/hyaa131

Connor, S. R. (2008). Development of hospice and palliative care in the United States. *OMEGA - Journal of Death and Dying, 56*(1), 89–99. https://doi.org/10.2190/OM.56.1.h

Consuegra-Fernández, M., & Fernandez-Trujillo, A. (2020). La soledad de los pacientes con COVID-19 al final de sus vidas. *Revista de Bioética y Derecho*, (50), 81-98. https://doi.org/10.1344/rbd2020.50.31683

Crimmins, R. M., Elliott, L., & Absher, D. T. (2021). Palliative care in a death-denying culture: Exploring barriers to timely palliative efforts for heart failure patients in the primary care setting. *American Journal of Hospice and Palliative Medicine, 38*(1), 77–83. https://doi.org/10.1177/1049909120920545

Cross, S. H., & Warraich, H. J. (2019). Changes in the place of death in the United States. *The New England Journal of Medicine, 381*(24), 2369–2370. https://doi.org/10.1056/NEJMc1911892

Death with Dignity. (2023, November 14). *In your state*. https://deathwithdignity.org/states/

De Souza, J., Gillett, K., Froggatt, K., & Walshe, C. (2020). Perspectives of elders and their adult children of black and minority ethnic heritage on end-of-life conversations: A meta-ethnography. *Palliative Medicine, 34*(2), 195-208. https://doi.org/10.1177/0269216319887070

Diaz, D. (2019). Medical aid-in-dying is an ethical and important end-of-life care option. *The American Journal of Bioethics, 19*(10), 8–9. https://doi.org/10.1080/15265161.2019.1659619

Dose, A. M., Carey, E. C., Rhudy, L. M., Chiu, Y., Frimannsdottir, K., Ottenberg, A. L., & Koenig, B. A. (2015). Dying in the hospital: Perspectives of family members. *Journal of Palliative Care, 31*(1), 13–20. https://doi.org/10.1177/082585971503100103
Downar, J., Luk, T., Sibbald, R. W., Santini, T., Mikhael, J., Berman, H., & Hawryluck, L. (2011). Why do patients agree to a "Do not resuscitate" or "Full code" order? Perspectives of medical inpatients. *Journal of General Internal Medicine, 26*(6), 582–587. https://doi.org/10.1007/s11606-010-1616-2
Dumanovsky, T., Augustin, R., Rogers, M., Lettang, K., Meier, D. E., & Morrison, R. S. (2016). The growth of palliative care in U.S. hospitals: A status report. *Journal of Palliative Medicine, 19*(1). 8–15. https://doi.org/10.1089/jpm.2015.0351
Emanuel, E. J., Onwuteaka-Philipsen, B. D., Urwin, J. W., & Cohen, J. (2016). Attitudes and practices of euthanasia and physician-assisted suicide in the United States, Canada, and Europe. *JAMA, 316*(1), 79–90. https://doi.org/10.1001/jama.2016.8499
Etkind, S. N., Bone, A. E., Gomes, B., Lovell, N., Evans, C. J., Higginson, I. J., & Murtagh, F. E. M. (2017). How many people will need palliative care in 2040? Past trends, future projections and implications for services. *BMC Medicine, 15*(1), Article 102. https://doi.org/10.1186/s12916-017-0860-2
Fink, S. (2020, March 28). U.S. civil rights office rejects rationing medical care based on disability, age. *The New York Times*. https://www.nytimes.com/2020/03/28/us/coronavirus-disabilities-rationing-ventilators-triage.html
Fleming, J., Farquhar, M., Cambridge City over-75s Cohort (CC75C) study collaboration, Brayne, C., & Barclay, S. (2016). Death and the oldest old: Attitudes and preferences for end-of-life care--Qualitative research within a population-based cohort study. *PloS One, 11*(4), e0150686. https://doi.org/10.1371/journal.pone.0150686
Grodin, M. A., Miller, E. L., & Kelly, J. I. (2018). The Nazi physicians as leaders in eugenics and "euthanasia": Lessons for today. *American Journal of Public Health, 108*(1), 53–57. https://doi.org/10.2105/AJPH.2017.304120
Gysels, M., Evans, N., Meñaca, A., Andrew, E., Toscani, F., Finetti, S., Pasman, H. R., Higginson, I., Harding, R., Pool, R., & Project PRISMA (2012). Culture and end of life care: A scoping exercise in seven European countries. *PloS One, 7*(4), Article e34188. https://doi.org/10.1371/journal.pone.0034188
Health Resources & Services Administration. (2023, October). *Organ donation statistics*. https://www.organdonor.gov/learn/organ-donation-statistics
Hansen, M. I. T., Haugen, D. F., Sigurdardottir, K. R, Kvikstad, A., Mayland, C. R., Schaufel, M. A., & the ERANet-LAC CODE Project Group (2020). Factors affecting quality of end-of-life hospital care: A qualitative analysis of free text comments from the i-CODE survey in Norway. *BMC Palliative Care, 19*, Article 98. https://doi.org/10.1186/s12904-020-00609-x
Heckel, M., Vogt, A. R., Stiel, S., Radon, J., Kurkowski, S., Goebel, S., Ostgathe, C., & Weber, M. (2020). The quality of care of the dying in hospital-next-of-kin perspectives. *Supportive Care in Cancer, 28*(9), 4527–4537. https://doi.org/10.1007/s00520-020-05465-2
Iverson, E., Celious, A., Kennedy, C. R., Shehane, E., Eastman, A., Warren, V., & Freeman, B. D. (2014). Factors affecting stress experienced by surrogate decision makers for critically ill patients: Implications for nursing practice. *Intensive & Critical Care Nursing, 30*(2), 77–85. https://doi.org/10.1016/j.iccn.2013.08.008
Jecker N. S. (2022). Too old to save? COVID-19 and age-based allocation of lifesaving medical care. *Bioethics, 36*(7), 802–808. https://doi.org/10.1111/bioe.13041
Jennings, N., Chambaere, K., Macpherson, C. C., Deliens, L., & Cohen, J. (2018). Main themes, barriers, and solutions to palliative and end-of-life care in the English-speaking Caribbean: A scoping review. *Pan American Journal of Public Health, 42*, Article e15. https://doi.org/10.26633/RPSP.2018.15
Lawry, D. R. (2023). Rethinking medical aid in dying: What does it mean to “do no harm?” *Journal of the Advanced Practitioner in Oncology, 14*(4), 307–316. https://doi.org/10.6004/jadpro.2023.14.4.5
LoPresti, M. A., Dement, F., & Gold, H. T. (2016). End-of-life care for people with cancer from ethnic minority groups: A systematic review. *American Journal of Hospice and Palliative Medicine, 3*(3), 291–305. https://doi.org/10.1177/1049909114565658
Maynard, B. (2014, November 2). *My right to death with dignity at 29*. https://www.cnn.com/2014/10/07/opinion/maynard-assisted-suicide-cancer-dignity/index.html
Mayo Clinic Staff. (2022, August 2). *Living wills and advance directives for medical decisions*. Mayo Clinic. https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/living-wills/art-20046303
Milićević, N. (2002). The hospice movement: History and current worldwide situation. *Archive of Oncology, 10*(1), 29–32. https://doiserbia.nb.rs/img/doi/0354-7310/2002/0354-73100201029M.pdf
Morris, S., Fletcher, K., & Goldstein, R. (2019). The grief of parents after the death of a young child. *Journal of Clinical Psychology in Medical Settings, 26*(3), 321–338. https://doi.org/10.1007/s10880-018-9590-7
National Institute on Aging. (2022, October 31). *Advance care planning: Advance directives for health care*. https://www.nia.nih.gov/health/advance-care-planning/advance-care-planning-advance-directives-health-care
Ng, R., & Indran, N. (2021). Societal perceptions of caregivers linked to culture across 20 countries: Evidence from a 10-billion-word database. *PLoS ONE, 16*(7), Article e0251161. https://doi.org/10.1371/journal.pone.0251161
Pinto, S., Lopes, S., de Sousa, A. B., & Gomes, B. (2023). Preferences about place of end-of-life care and death of patients with life-threatening illnesses and their families: A protocol for an umbrella review. *BMJ Open, 13*(3), Article e066374. https://doi.org/10.1136/bmjopen-2022-066374
ProCon.org. (2023, August 9). *States and DC with legal medical aid in dying (MAID)*. https://euthanasia.procon.org/states-with-legal-physician-assisted-suicide/
Reischer, H. N., & Beverley, J. (2019). Diverse approaches to meaning-making at the end of life. *American Journal of Bioethics, 19*(12), 68–70. https://doi.org/10.1080/15265161.2019.1674419
Sanderson, C., Miller-Lewis, L., Rawlings, D., Parker, D., & Tieman, J. (2019). "I want to die in my sleep"-how people think about death, choice, and control: findings from a Massive Open Online Course. *Annals of Palliative Medicine, 8*(4), 411–419. https://doi.org/10.21037/apm.2019.03.07
Schallmo, M. K., Dudley-Brown, S., & Davidson, P. M. (2019). Healthcare providers' perceived communication barriers to offering palliative care to patients with heart failure: An integrative review. *The Journal of Cardiovascular Nursing, 34*(2), E9–E18. https://doi.org/10.1097/JCN.0000000000000556
Searight, H. R. (2022). Cross-cultural issues in end-of-life care: A selective overview of recent research and ethical perspectives. In J. A. Jaworski (Ed.), *Advances in sociology research* (vol. 38, pp. 139–161). Nova Science Publishers, Inc. https://www.researchgate.net/profile/Konstantinos-Malagas-2/publication/360312976_Organizational_Culture_Types_and_Critical_Success_Factors_for_Organizational_Excellence/links/626fb2222f9ccf58eb25ff19/Organizational-Culture-Types-and-Critical-Success-Factors-for-Organizational-Excellence.pdf#page=153
Soto-Perez-de-Celis, E., Chavarri-Guerra, Y., Pastrana, T., Ruiz-Mendoza, R., Bukowski, A., & Goss, P. E. (2017). End-of-life care in Latin America. *Journal of Global Oncology 3*(3), 261-270. https://doi.org/10.1200/JGO.2016.005579
Srivastava, V. (2014). Euthanasia: A regional perspective. *Annals of Neurosciences, 21*(3), 81–82. https://doi.org/10.5214/ans.0972.7531.210302
Sulmasy, D. P., Hughes, M. T., Yenokyan, G., Kub, J., Terry, P. B., Astrow, A. B., Johnson, J. A., Ho, G., & Nolan, M. T. (2017). The trial of ascertaining individual preferences for loved ones' role in end-of-life decisions (TAILORED) study: A randomized controlled trial to improve surrogate decision making. *Journal of Pain and Symptom Management, 54*(4), 455–465. https://doi.org/10.1016/j.jpainsymman.2017.07.004
Teno, J. M., Clarridge, B. R., Casey, V., Welch, L. C., Wetle, T., Shield, R., & Mor, V. (2004). Family perspectives on end-of-life care at the last place of care. *JAMA, 291*(1), 88–93. https://doi.org/10.1001/jama.291.1.88
von Gunten, C. F., & Ryndes, T. (2005). The academic hospice. *Annals of Internal Medicine, 143*(9), 655–658. https://doi.org/10.7326/0003-4819-143-9-200511010-00009
Wachterman, M. W., Luth, E. A., Semco, R. S., & Weissman, J. S. (2022). Where Americans die—Is there really "no place like home"? *The New England Journal of Medicine, 386*(11), 1008–1010. https://doi.org/10.1056/NEJMp2112297
Wakam, G. K., Montgomery, J. R., Biesterveld, B. E., & Brown, C. S. (2020). Not dying alone— Modern compassionate care in the Covid-19 pandemic. *The New England Journal of Medicine, 382*(24), e88. https://doi.org/10.1056/NEJMp2007781
Walling, A. M., Asch, S. M., Lorenz, K. A., Roth, C. P., Barry, T., Kahn, K. L., & Wenger, N. S. (2010). The quality of care provided to hospitalized patients at the end of life. *Archives of Internal Medicine, 170*(12), 1057–1063. https://doi.org/10.1001/archinternmed.2010.175
Wammes, J. D., Nakanishi, M., van der Steen, J. T., & MacNeil Vroomen, J. L. (2022). The Revised Medical Care Act is associated with a decrease in hospital death for the total Japanese older adult population regardless of dementia status: An interrupted time series analysis. *PLoS ONE, 17*(3), Article e0264624. https://doi.org/10.1371%2Fjournal.pone.0264624
Wilson, D. M., Fabris, L. G., Martins, A. L. B., Dou, Q., Errasti-Ibarrondo, B., & Bykowski, K. A. (2022). Location of death in developed countries: Are hospitals a primary place of death and dying now? *OMEGA - Journal of Death and Dying*, 0(0). https://doi.org/10.1177/00302228221142430
Wright, A. A., Keating, N. L., Balboni, T. A., Matulonis, U. A., Block, S. D., & Prigerson, H. G. (2010). Place of death: Correlations with quality of life of patients with cancer and predictors of bereaved caregivers' mental health. *Journal of Clinical Oncology, 28*(29), 4457–4464. https://doi.org/10.1200/JCO.2009.26.3863

17.3 Coping with Death

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify elements and themes of the grieving and mourning process
- Describe common ways to support people who have lost a loved one
- Describe various ways of remembering and honoring loved ones

Dyan is studying to become a counselor because she feels her Ojibwe community needs more mental health resources. She's currently learning about grief counseling and discovering that grief is more complex than she thought. She always believed everyone went through a specific set of emotional responses after the death of a loved one, but now she's finding that the emotional reaction to death can vary across people and situations. Dyan realizes that if she wants to be an effective counselor, she must take an individualized and personal approach to supporting people who've experienced a loss.

In her studies, Dyan also learns that this support includes helping people find ways to remember and honor their loved ones. She has seen funerals and memorials both in person and in various forms of media. As a creative person, she likes the idea of helping her clients develop meaningful artifacts they can use to help adjust to the loss of their loved one.

Coping with death isn't a singular process. There are emotional and cognitive aspects of reacting to death—both our own future passing and someone else's—and behaviors and rituals people use to express their feelings and remember and honor the deceased. Some of these vary by culture, but they may also vary on smaller, more individual dimensions. Thus there is no one "right" way to respond to death. Most people refrain from speaking ill of the deceased or being deliberately disrespectful, but beyond that we all react to death in different ways.

Grief, Mourning, and Bereavement

Coping with the death of a loved one is a deeply personal process, and the grieving process varies for each individual and family, additionally influenced by sociocultural differences. The internal, emotional reaction to loss is referred to as **grief**, whereas **mourning** is the outward, behavioral manifestation of grief (Figure 17.16). A related concept is **bereavement**, the experience of the death of a loved one. Bereavement is different from grief and mourning because it doesn't indicate anything about how a person feels internally or what they're doing. It simply means that the person has experienced a loss.

(a) (b)

FIGURE 17.16 (a) Grief is the internal emotional reaction to loss, while mourning includes (b) the behaviors grieving people exhibit. (credit a: modification of work "Khatam funeral of Asadollah Fereydoun, Noor Mosque, Tehran - 5 October 2011 02" by Mohammad Hassanzadeh, Fars Media Corporation/Wikimedia Commons, CC BY 4.0; credit b: modification of work "Military Funeral Honors are Conducted for U.S. Marine Corps Cpl. Spencer Collart in Section 52" by Arlington National Cemetery/Flickr, Public Domain)

There are many aspects of grief and mourning. In addition to cultural factors, we need to consider who is experiencing the grief, the person who's dying or their family and friends. We also experience grief differently

depending on who has died; the death of a child often evokes different grief reactions than the death of an older adult. Grief is a normal, understandable reaction to loss. There are situations in which it lasts an unusually long time and becomes problematic, but mental health professionals generally don't regard grief as something that needs to be "fixed."

Themes of Grief

Some of the best-known work on grief was done by Swiss psychiatrist Elisabeth Kübler-Ross. After interviewing hospice patients about their emotional states, Kübler-Ross concluded that a dying person goes through an emotional process in their adjustment to the end of their life. While we often hear the parts of this process described as "stages," the word "themes" is more appropriate, because they describe the dying person's emotional and sometimes behavioral priorities rather than specific milestones a person needs to reach. In other words, **Kübler-Ross's themes of grief** represent cognitive, emotional, and behavioral reactions to our own impending death. The five themes are denial, anger, bargaining, depression, and acceptance (Table 17.1).

Theme	Description
Denial	A person may react to a diagnosis with disbelief. They may insist the test results are wrong or that someone made a mistake. They may solicit cures or second opinions.
Anger	A person may direct their anger generally or at specific targets such as doctors or a higher power. They may say that life is unfair.
Bargaining	A person may beg a higher power to spare their life. They may promise to be on "good behavior" (such as by donating money to charity) if they get well.
Depression	A person may experience a profound sense of loss, not only for their life, but for associated losses such as missing future family milestones.
Acceptance	A person deals realistically with coming death, neither happy nor giving up.

TABLE 17.1 Kübler-Ross Themes of Grief (source: Kübler-Ross, 1969)

Kübler-Ross's theory quickly gained widespread acceptance (Bernau, 2022; Corr, 2020; Daniel, 2023) and has been proposed as a way to describe other types of losses, such as the death of a loved one, changes in the workplace, and addiction recovery (Daniel, 2023). What explains this lasting popularity? First, this theory seems logical and intuitive. Second, Kübler-Ross wrote in plain language that was easy to understand. Third, the theory filled a gap because no others about the psychological adjustment to death were widely used in clinical practice at that time (Bernau, 2022).

Despite it's popularity, the Kubler-Ross's theory does have some limitations. Her research was qualitative and she did not track any of her participants longitudinally to determine whether they actually experienced these themes, and in the order she proposed (Bregman, 2019; Kastenbaum, 2012). These methodological limitations are important because counselors and health-care professionals may regard Kübler-Ross's themes as a "prescription" for grieving and fail to properly support clients who don't fit their expectations (McLean et al., 2022; Stroebe et al., 2017).

Although anecdotal reports suggest general support for Kübler-Ross's themes (Lyckholm, 2019), other research indicates that specific circumstances may influence whether and how people experience them (Corr, 2019, 2020, 2021; Kastenbaum, 2012; Maciejeski et al., 2007; McLean et al., 2022; Schulz & Aderman, 1984). For example, people grieving a stillbirth may not engage in bargaining because they recognize the outcome can't be changed (Dastidar, 2019). Nor is the experience of grief linear: it may fluctuate, and a person may

experience a temporary increase in grief symptoms such as sadness or anger around anniversaries or holidays (American Psychiatric Association, 2022; Stroebe et al., 2017). Some researchers have proposed the existence of **middle knowledge**, an intermediate stage that represents a simultaneous denial and acceptance of death (Weisman, 1972). Someone in this stage may engage in end-of-life planning but still deny the reality of their impending death (Breitbart, 2017; Polacek et al., 2023).

While Kübler-Ross's theory does imply a sequential progression, we shouldn't regard it as a rulebook for how to grieve (Corr, 2020, 2021; Stroebe et al., 2017; Tyrrell et al., 2023). Kübler-Ross herself didn't propose a timetable for grieving, and acknowledged that people may not experience all the themes or in the same order (Bregman, 2019; Kübler-Ross & Kessler, 2005; Tyrrell et al., 2023). People may skip some themes and revisit earlier themes, such as a person returning to depression or anger upon realizing that they will not see their grandchildren graduate high school. Kübler-Ross believed dying people should be allowed to discuss their feelings openly without being dismissed or told to be optimistic (Kübler-Ross, 1969) (Figure 17.17).

FIGURE 17.17 Grieving people need support from others in their lives. (credit: modification of work "prs_0061.JPG" by Ewan Topping/Flickr, CC BY 2.0)

Open discussion is generally beneficial for improving emotional well-being and coping (Barlé et al., 2017; McCoyd et al., 2021; Stroebe et al., 2013) and is also part of clinically ethical behavior (Dugan, 2004). This attention to the dying person's feelings also helps avoid social death because the dying person is still regarded as human (Corr, 2019, 2021).

Other research suggests that experiencing these themes is considered adaptive, although the reason may be that they fit people's schemas of what grief looks like (Hashim et al., 2013; McLean et al., 2022; Penman et al., 2014). Having a framework for processing different emotions associated with grief may also be comforting or provide structure in an overwhelming situation (Hall, 2014). Regardless of preconceived notions of what grief looks like, health-care providers and others who interact with grieving people need to be flexible and adapt to the needs of the situation (Corr, 2021; Flugelman, 2021; McCoyd et al., 2021). There are different patterns of grieving that vary across individuals, cultures, and the context in which grief occurs. It may not be possible to always accommodate all these variables, but being aware of them is a good first step (Stroebe et al., 2017).

Other Theories of Grief

Kübler-Ross's model is perhaps the best-known theory of grief, but it's not the only one. Again, these theories offer not prescriptions for how to grieve, but rather context for understanding the perspective of the person who is grieving.

Neimeyer and colleagues (2006, 2010) and Wolfelt (2005) devised theories that viewed the grieving process as a narrative, story, or journey, with less emphasis on tasks or stages. For Neimeyer, the end goal of the grieving process is to gain a sense of meaning and purpose, which may mean adjusting our worldview (Neimeyer et al.,

2006, 2010) through processes similar to Piaget's mechanisms of assimilation and accommodation. Wolfelt values developing a sense of meaning and places more emphasis on building social networks such as family relationships, friendships, and increased participation in social activities to help compensate for loss (Wolfelt, 2005).

Another theory is the **dual-process model**, initially proposed by Stroebe and Schut in 1999. Grief has two processes in this model: loss orientation and restoration orientation. During **loss orientation**, the bereaved person addresses the emotional aspects of the loss by accepting the situation and sharing grief with others. During **restoration orientation**, the person copes with the changes brought about by their loved one's death, including changes to or the addition of relationships and roles. These processes aren't sequential but occur simultaneously, with the bereaved person cycling between them (Stroebe & Schut, 1999, 2015; Stroebe et al., 2013, 2017).

Despite several differences, these theories, including Kübler-Ross's, have much in common. All treat grief as a process, not an event, and acknowledge that coping with it takes time and effort. They also emphasize that grieving is an individual process; even the theories that propose tasks, stages, or themes avoid prescribing a specific order or timeframe for them. We can use this information to be more compassionate with ourselves and others and not pressure people to move on unrealistically (Harris, 2021).

Contextual Influences on Grief and Mourning

The age at which death occurs, the relationship between the deceased and their survivors, and the specific dying trajectory all also influence the expression of grief. For example, the death of a child or young adult appears to be harder to cope with than the death of an older adult (Morris et al., 2019), perhaps because dying young violates expectations for how the human lifespan should unfold (Neugarten, 1976). When an infant or very young child dies, typical rituals surrounding death may not occur, which may affect the family's experience of grief (McCoyd et al., 2021; Institute of Medicine Committee for the Study of Health Consequences of the Stress of Bereavement, 1984). It's easy to assume the child's parents can turn to each other for support, but parents may each feel they need to be strong and avoid burdening the other, so neither discusses their feelings and everyone's grief is exacerbated (Barlé et al., 2017; Institute of Medicine Committee for the Study of Health Consequences of the Stress of Bereavement, 1984; Stroebe et al., 2013). Not every family has two parents, and parents may struggle to care for other children in the home while simultaneously processing their own grief (Dastidar, 2019; Howard Sharp et al., 2018; Morris, 2019). They may become overprotective for fear something will happen to their living children (Dastidar, 2019; Kübler-Ross, 2011).

The relationship between the deceased and their survivors may also affect grieving. We typically regard the death of a spouse as one of the most stressful events a person can experience (Holmes & Rahe, 1967; Institute of Medicine Committee for the Study of Health Consequences of the Stress of Bereavement, 1984; Oswald & Powdthavee, 2008). However, other research (Cleiren, 1993; Fujisawa et al., 2010; Maccallum et al., 2015; Morris, 2019) indicates that losing a child is equally difficult or even more so (Aoun et al., 2015; Guldin et al., 2017; Nielsen et al., 2019). Bereaved parents and spouses may also experience different outcomes. For example, loneliness increases for widowed spouses but not for bereaved parents (Barlé et al., 2017).

The closeness of the relationship and/or amount of conflict within the relationship may also be relevant (Currier et al., 2015; Kramer et al., 2010; Shear et al., 2013). However, even people not close to the deceased, such as health-care providers, may experience grief, particularly those who work in fields such as oncology, palliative care, and critical care. Unlike the grief experienced by loved ones, however, the grief of health-care providers may go unacknowledged (Childers & Arnold, 2019), which can be harmful to well-being (Barlé et al., 2017; McCoyd et al., 2021; Stroebe et al., 2013).

The dying trajectory also appears to matter. Perhaps not surprisingly, a sudden death is associated with increased feelings of grief (Aoun et al., 2015; Barlé et al., 2017; Cleiren, 1993; Guldin et al., 2017; Kaplow et al., 2014) because there is less time to emotionally prepare for it. The dying trajectory and cause of death may also

differ by age; causes of death for young children are likely to be sudden events like accidents (Centers for Disease Control and Prevention, 2023). Because both a sudden death and the death of a child are associated with heightened grief responses (Aoun et al., 2015; Morris et al., 2019), coping with the death of a child may be especially difficult.

Is cause of death associated with the experience of grief? Some studies indicate that losing a loved one to suicide produces stronger grief reactions than other causes (Cleirin, 1993; Guldin et al., 2017), but this finding isn't consistent (Kaplow et al., 2014). The sudden trajectory of death in cases of suicide might be more influential than the cause of death. In cases of dementia, caregivers are likely to experience grief in multiple ways. Lindauer and Harvath (2014) identified four sources of grief for dementia caregivers: the uncertain trajectory of the disease, impaired communication with the care recipient, changes in the relationship with them, and their loss of personhood. Many transition points occur in the caregiving relationship as dementia progresses, each of which may bring about new grief. Cognitive impairments also prevent caregivers and care recipients from sharing memories and feelings, which can complicate the experience of grief (Lindauer & Harvath, 2014; Rupp et al., 2023).

Caring for the Bereaved

People who are bereaved need care and support, although they may not all need the same type or degree. One challenge is that bereaved people do not always seek help and do not always regard the help they receive as valuable (Barlé et al., 2017; McCoyd et al., 2021; Morris et al., 2019), possibly because the person trying to help may not truly understand the experiences of the person seeking help. Circumstances such as the dying trajectory and age of the deceased may also affect the survivors' adjustment. Because there's no right way to grieve or mourn, and no correct time period in which these things occur, caring for the bereaved requires careful attention to the person's needs.

As you might expect, bereavement is associated with emotional responses such as sadness, anger, loneliness, and guilt (Aoun et al., 2015; Barlé et al., 2017; Currier et al., 2015; Guldin et al., 2017; McCoyd et al., 2021; Morris et al., 2019;). However, physical responses are also common, such as decreased immune system functioning and increased risk of heart attack and death (Shear et al., 2013; Seiler et al., 2020). Some of these may be caused by increased levels of stress hormones like cortisol (McCoyd et al., 2021), which is associated with health problems such as diabetes and high blood pressure (Iob & Steptoe, 2019; Ortiz et al., 2022; Seiler et al., 2020). Health-care providers, counselors, and other people in the bereaved person's life need to attend to both the emotional and the physical aspects of well-being, particularly in the first few months after the loss (Figure 17.18). Some cultural communities have built-in practices for doing so. For example, in Kenya and Uganda, friends and family are expected to provide specific support to the bereaved such as arranging the funeral, helping with childcare and housework, and even providing financial assistance. This support is viewed as being crucial for helping the bereaved adjust and cope with their loss (Ayebare et al., 2021).

FIGURE 17.18 A person experiencing difficulties coping with grief may benefit from psychotherapy. (credit: modification of work "Counselling session" by "tiyowprasetyo"/Wikimedia Commons, CC0 1.0)

One strategy for caring for the bereaved is to identify people with the highest risk for negative long-term outcomes. People who have lost someone to a sudden or traumatic death are at increased risk for mental health problems, self-harm, and suicide, particularly in the first year after death (Aoun et al., 2015; Barlé et al., 2017; Guldin et al., 2017; Morris et al., 2019; Shear et al., 2013). However, there's much variability in the way people cope (Neimeyer et al., 2010). Some researchers have focused on **complicated grief**, which lasts longer than typical and is associated with long-term adjustment problems. As the standards and definitions for identifying and classifying psychological disorders evolve, the question of whether complicated grief is a diagnosable psychological disorder has been debated (Cozza et al., 2016; Shear et al., 2011). The addition of *prolonged grief disorder* to the most recent revision of the DSM (the *DSM-V-TR*) encompasses the general nature of complicated grief.

When bereaved people begin psychotherapy, it may include treating existing problems such as anxiety disorders or helping the person work through issues from earlier in life. Therapeutic approaches often combine improving coping resources and building social support. Sometimes therapists use formal psychotherapy techniques such as systematic desensitization to deal with anxiety-provoking situations, and cognitive-behavioral therapy to manage self-defeating thoughts and behaviors (Barlé et al., 2017). Helping the bereaved person find meaning in their situation may also be helpful (Barlé et al., 2017; Neimeyer et al., 2010; Ng, 2021; Reischer & Beverley, 2019). This can include creating their own narrative of the loss, sometimes through therapeutic writing such as a letter to the deceased person. A key challenge in this type of therapy is balancing validation of the bereaved person's feelings with helping them to make meaning out of that loss and move forward (Currier et al., 2015; Neimeyer et al., 2010).

Remembering and Honoring Those Who Have Died

Thousands of years ago, Neanderthal humans in Europe began to bury their dead, and centuries later the Romans published obituaries on papyrus sheets. The Taj Mahal, Emperor Shah Jahan's memorial to one of his wives in Agra, India, was more than twenty years in the making in the mid-1600s. And after Queen Victoria's beloved husband Albert died in 1861, she wore black for the remaining forty years of her life. Humans have a long and varied history of honoring and memorializing the dead.

Many cultures have rituals to mark someone's death and build meaning from their passing. Some are secular ceremonies that gather people together, while others have religious significance. Some serve primarily to support the surviving family, while others sustain the memory of ancestors, such as Shinto and Buddhist shrines and the Mexican Day of the Dead (McCoyd et al., 2021). In southern Ghana, some people are buried in elaborate "fantasy coffins" (*abebuu adekai*) that commemorate aspects of the person's life, representing the belief that the afterlife is the same as this one (Gundlach, 2017; Potocnik & Adum-Kyeremeh, 2022).

Are people more likely to have unresolved grief if these rituals aren't performed? Research on this is inconclusive, but it does suggest that planning and participating in grief rituals can have benefits if the rituals allow people to grieve in a way that is meaningful to them (Burrell & Selman, 2020). Some rituals are viewed as essential, and misfortune is associated with omitting them. For example, the Nawfia people of Nigeria routinely hold a second funeral on the one-year anniversary of the first, to finalize the deceased person's transition to the afterlife (Ugwu, 2023).

Sometimes people participate in death rituals from several cultures. Educator Linita Eapen Mathew (2021) lives in Canada but her ethnic heritage is Indian, so she experienced both cultures' approaches to mourning following the death of her father. Canadians generally view grief as private, and family members have to make funeral arrangements in a short time frame. The Canadian rituals thus focused on a single event—the funeral—after which the mourning period was considered to be largely over and the bereaved needed to move on. Mathew was left feeling adrift at a time when support was needed most. In contrast, the Indian Christian practices in which she participated after going to India included regular prayer, fasting, charitable contributions, and sacred ceremonies, most done in the company of other mourners. These rituals "offered meaningful and sustaining ways to honour [her] grief …and enhanced [her] ability to heal" (p. 791).

The COVID-19 pandemic reduced funeral attendance in general (Burrell & Selman, 2022), as well as specific practices such as the African American Baptist custom of having a large gathering with a meal after a burial, and the Jewish tradition of *nichum aveilim*, in which members of the community visit the bereaved family to provide emotional support, prayer, and food (Schuck et al., 2020). Islam and Judaism both have postmortem rituals for handling, washing, and purifying the body (Gabbay & Fins, 2019), which were also curtailed during the pandemic. It remains to be seen whether these changes will have long-term effects on grief rituals, or in what way the pandemic has shaped our approach to communal grieving.

Use of Technology

Technology also influences death rituals. Carlson and Frazer (2015) describe how Aboriginal Australians use social media, particularly Facebook, for "Sorry Business"—participation in death-related activities such as providing comfort to the bereaved and remembering the dead. Given a high mortality rate, large kinship networks, and expectations of participation in funerals and other remembrance activities, conducting Sorry Business in person is expensive and time-consuming and could mean traveling 600 miles or more. However, Aboriginal Australians—and people in many other countries—now commonly use social media to send condolences and pay respects. Some even treat a deceased person's Facebook page like a memorial or grave site and post photos or sentiments there on important dates, much like visiting a burial place in person (Blanch, 2021; Ryan, 2023). Additionally, funeral homes in many countries now offer the option of a livestreamed or recorded funeral for mourners who can't attend in person (Bitusikova, 2020; Uriu et al., 2021).

Remembering and honoring the dead does not always involve official rituals from a particular culture or religious belief. For some, a ritual may be gathering friends to share memories and stories of the person's life or toasting to their memory with a small group of close loved ones.

IT DEPENDS

What Is the Impact of Losing a Pet?

Pets bring emotional support and companionship to many people, and their death is often highly distressing. However, other people may not take the pet owner's sorrow seriously. *Disenfranchised grief* is grief that's not acknowledged or recognized, and the death of a pet is believed to be a potential instance of this experience (Bussolari et al., 2018; Cordaro, 2012, Green et al., 2018).

Ambiguous loss is unresolved grief that typically occurs in situations lacking closure. Because it is associated with disappearance and/or sudden death, both of which may occur in pet loss, bereaved pet owners are at risk for this outcome (Green et al., 2018). This point may be particularly useful for parents to know, because more than half of children in countries where owning pets is common will experience the loss of at least one before turning seven (Crawford et al., 2020). Caregivers can use this knowledge to be more sensitive and supportive in helping their children navigate this loss.

Do people grieve the same way following a pet's death and a human's death? In general, it appears they do. People discussing the loss of a pet tend to describe their feelings with the same language used in discussing the loss of a human (Lyons et al., 2022). Some research indicates that bereaved pet owners experience grief in ways predicted in Kübler-Ross's model and the dual-process model (Cordaro, 2012).

Bereaved pet owners should be forgiving of themselves and not judge themselves for their grief. This self-care may compensate for possible lack of support from others (Bussolari et al., 2018). If you know a bereaved pet owner, acknowledging the owner's grief and providing them with support should help their grieving process (Bussolari et al., 2018, Cordaro, 2020).

References

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/

appi.books.9780890425787
Aoun, S. M., Breen, L. J., Howting, D. A., Rumbold, B., McNamara, B., & Hegney, D. (2015). Who needs bereavement support? A population based survey of bereavement risk and support need. *PLoS ONE, 10*(3), 1–14. https://doi.org/10.1371/journal.pone.0121101
Barlé, N., Wortman, C. B., & Latack, J. A. (2017). Traumatic bereavement: Basic research and clinical implications. *Journal of Psychotherapy Integration, 27*(2), 127–139. http://dx.doi.org/10.1037/int0000013
Bernau, J. A. (2022). The institutionalization of Kübler-Ross's five-stage model of death and dying. *OMEGA - Journal of Death and Dying, 0*(0). https://doi.org/10.1177/00302228221098893
Bitusikova, A. (2020). COVID-19 and funeral-by-Zoom. *Urbanities-Journal of Urban Ethnography, 10*, 51–55. https://www.anthrojournal-urbanities.com/wp-content/uploads/2020/10/Vol.-10-Suppl.-4-September-2020.pdf#page=53
Blanch, S. (2021). *Doing death differently? A digital ethnography of Aotearoa New Zealand death talking communities* (Publication No. 9926479886401891) [Master's thesis, University of Otago]. http://hdl.handle.net/10523/10725
Bregman, L. (2019). Kübler-Ross and the re-visioning of death as loss: Religious appropriation and responses. *Journal of Pastoral Care & Counseling, 73*(1), 4–8. https://doi.org/10.1177/1542305019831943
Breitbart W. (2017). On the inevitability of death. *Palliative & Supportive Care, 15*(3), 276–278. https://doi.org/10.1017/S1478951517000372
Burrell, A., & Selman, L. E. (2022). How do funeral practices impact bereaved relatives' mental health, grief and bereavement? A mixed methods review with implications for COVID-19. *OMEGA - Journal of Death and Dying, 85*(2), 345–383. https://doi.org/10.1177/0030222820941296
Bussolari, C., Habarth, J. M., Phillips, S., Katz, R., & Packman, W. (2018). Self-compassion, social constraints, and psychosocial outcomes in a pet bereavement sample. *OMEGA - Journal of Death and Dying, 82*(3), 389–408. https://doi.org/10.1177/0030222818814050
Carlson, B. & Frazer, R. (2015). "It's like going to a cemetery and lighting a candle": Aboriginal Australians, Sorry Business and social media. *AlterNative: An International Journal of Indigenous Peoples, 11*(3), 211–224. https://doi.org/10.1177/117718011501100301
Centers for Disease Control and Prevention (n.d.). *WISQARS leading causes of death visualization tool*. https://wisqars.cdc.gov/lcd/?o=LCD&y1=2021&y2=2021&ct=10&cc=ALL&g=00&s=0&r=0&ry=0&e=0&ar=lcd1age&at=groups&ag=lcd1age&a1=0&a2=199
Childers, J., & Arnold, B. (2019). The inner lives of doctors: Physician emotion in the care of the seriously ill. *American Journal of Bioethics, 19*(12), 29–34. https://doi.org/10.1080/15265161.2019.1674409
Cleiren, M. (1993). *Bereavement and adaptation: A comparative study of the aftermath of death*. Taylor & Francis.
Cordaro, M. (2012). Pet loss and disenfranchised grief: Implications for mental health counseling practice. *Journal of Mental Health Counseling, 34*(4), 283–294. https://doi.org/10.17744/mehc.34.4.41q0248450t98072
Corr, C. A. (2019). The 'five stages' in coping with dying and bereavement: Strengths, weaknesses and some alternatives, *Mortality, 24*(4), 405–417. https://doi.org/10.1080/13576275.2018.1527826
Corr, C. A. (2020). Elisabeth Kübler-Ross and the "five stages" model in a sampling of recent American textbooks. *OMEGA - Journal of Death and Dying, 82*(2), 294–322. https://doi.org/10.1177/0030222818809766
Corr, C. A. (2021). Should we incorporate the work of Elisabeth Kübler-Ross in our current teaching and practice and, if so, how? *OMEGA - Journal of Death and Dying, 83*(4), 706–728. https://doi.org/10.1177/0030222819865397
Cozza, S. J., Fisher, J. E., Mauro, C., Zhou, J., Ortiz, C. D., Skritskaya, N., Wall, M. M., Fullerton, C. S., Ursano, R. J., & Shear, M. K. (2016). Performance of DSM-5 persistent complex bereavement disorder criteria in a community sample of bereaved military family members. *American Journal of Psychiatry, 173*(9), 919–929. https://doi.org/10.1176/appi.ajp.2016.15111442
Crawford, K. M., Zhu, Y., Davis, K. A., Ernst, S., Jacobsson, K., Nishimi, K., Smith, A. D. A. C., & Dunn, E. C. (2021). The mental health effects of pet death during childhood: Is it better to have loved and lost than never to have loved at all? *European Child & Adolescent Psychiatry, 30*(10), 1547–1558. https://doi.org/10.1007/s00787-020-01594-5
Currier, J. M., Irish, J. E., Neimeyer, R. A., & Foster, J. D. (2015). Attachment, continuing bonds, and complicated grief following violent loss: Testing a moderated model. *Death Studies, 39*(4), 201–210. https://doi.org/10.1080/07481187.2014.975869
Daniel, T. (2023). The stubborn persistence of grief stage theory. *OMEGA - Journal of Death and Dying, 0*(0). https://doi.org/10.1177/00302228221149801
Dastidar, J. G. (2019). On death and dying at the beginning of life: Grieving the stillborn baby. *American Journal of Bioethics, 19*(12), 74–77. https://doi.org/10.1080/15265161.2019.1674420
Dugan, D. O. (2004). Appreciating the legacy of Kübler-Ross: One clinical ethicist's perspective. *American Journal of Bioethics, 4*(4), W24–W28. https://doi.org/10.1080/15265160490908112
Flugelman, M. Y. (2021). How to talk with the family of a dying patient: Anger to understanding, rage to compassion, loss to acceptance. *BMJ Supportive & Palliative Care, 11*(4), 418–421. https://doi.org/10.1136/bmjspcare-2021-002971
Fujisawa, D., Miyashita, M., Nakajima, S., Ito, M., Kato, M., & Kim, Y. (2010). Prevalence and determinants of complicated grief in general population. *Journal of Affective Disorders, 127*(1–3), 352–358. https://doi.org/10.1016/j.jad.2010.06.008
Gabbay, E., & Fins, J. J. (2019). Go in peace: Brain death, reasonable accommodation and Jewish mourning rituals. *Journal of Religion and Health, 58*(5), 1672–1686. https://doi.org/10.1007/s10943-019-00874-y
Green, C., Kangas, M., & Fairholm, I. (2018). Investigating the emotion regulation strategies implemented by adults grieving the death of a pet in Australia and the UK. *Journal of Loss & Trauma, 23*(6), 484–501. https://doi.org/10.1080/15325024.2018.1478934
Guldin, M.-B., Ina Siegismund Kjaersgaard, M., Fenger-Grøn, M., Thorlund Parner, E., Li, J., Prior, A., & Vestergaard, M. (2017), Risk of suicide, deliberate self-harm and psychiatric illness after the loss of a close relative: A nationwide cohort study. *World Psychiatry, 16*(2), 193–199. https://doi.org/10.1002/wps.20422
Gundlach, C. (2017). *Art and the afterlife: Fantasy coffins by Eric Adjetey Anang* [Exhibition]. University of Iowa Museum of Art, Iowa City, IA, United States. https://www.academia.edu/36035201/Art_and_the_Afterlife_Fantasy_Coffins_by_Eric_Adjetey_Anang
Hall, C. (2014). Bereavement theory: Recent developments in our understanding of grief and bereavement. *Bereavement Care, 33*(1), 7–12. https://doi.org/10.1080/02682621.2014.902610
Harris, D. (2021). Compassion-focused grief therapy. *British Journal of Guidance and Counselling, 49*(6), 780–790. https://doi.org/10.1080/03069885.2021.1960948
Hashim, H. M. H., Mei-Li, L., & Guan, N. C. (2013). A journey from the known to the unknown: A qualitative study approach. *ASEAN Journal of Psychiatry, 14*(1), 25–30.
Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research, 11*(2), 213–218. https://doi.org/10.1016/0022-3999(67)90010-4
Howard Sharp, K. M., Russell, C., Keim, M., Barrera, M., Gilmer, M. J., Foster Akard, T., Compas, B. E., Fairclough, D. L., Davies, B., Hogan, N., Young-Saleme, T., Vannatta, K., & Gerhardt, C. A. (2018). Grief and growth in bereaved siblings: Interactions between different sources of social support. *School Psychology Quarterly, 33*(3), 363–371. https://doi.org/10.1037/spq0000253
Iob, E., & Steptoe, A. (2019). Cardiovascular disease and hair cortisol: A novel biomarker of chronic stress. *Current Cardiology Reports, 21*(10), 116. https://doi.org/10.1007/s11886-019-1208-7
Institute of Medicine Committee for the Study of Health Consequences of the Stress of Bereavement. (1984). *Reactions to Particular Types of Bereavement*. In M. Osterweis, F. Solomon, & M. Green, M. (Eds)., *Bereavement: Reactions, consequences, and care* (pp. 71–98) National Academies of Science. National Academies Press. https://www.ncbi.nlm.nih.gov/books/NBK217848/
Kaplow, J. B., Howell, K. H., & Layne, C. M. (2014). Do circumstances of the death matter? Identifying socioenvironmental risks for grief-related psychopathology in bereaved youth. *Journal of Traumatic Stress, 27*(1), 42–49. https://doi.org/10.1002/jts.21877
Kastenbaum, R. J. (2012). *Death, society, and human experience* (11th ed.). Pearson.
Kramer, B. J., Kavanaugh, M., Trentham-Dietz, A., Walsh, M., & Yonker, J. A. (2010). Complicated grief symptoms in caregivers of persons with lung cancer: the role of family conflict, intrapsychic strains, and hospice utilization. *OMEGA - Journal of Death and Dying, 62*(3), 201–220. https://doi.org/10.2190/om.62.3.a
Kübler-Ross, E. (1969). *On death and dying*. Macmillan.
Kübler-Ross, E. (2011). *On children and death*. Simon and Schuster.
Kübler-Ross, E., & Kessler, D. (2005). *On grief and grieving: Finding the meaning of grief through the five stages of loss*. Scribner.
Lindauer, A., & Harvath, T. A. (2014). Pre-death grief in the context of dementia caregiving: A concept analysis. *Journal of Advanced Nursing, 70*(10), 2196–2207. https://doi.org/10.1111/jan.12411
Lyckholm, L. J. (2019). Thirty years later: An oncologist reflects on Kübler-Ross's work. *American Journal of Bioethics, 19*(12), 10–12. https://doi.org/10.1080/15265161.2019.1676592
Lyons, M., Floyd, K., McCray, H., Peddie, C., Spurdle, K., Tlusty, A., Watkinson, C., & Brewer, G. (2022). Expressions of grief in online discussion forums: Linguistic similarities and differences in pet and human bereavement. *OMEGA - Journal of Death and Dying, 85*(4), 1007–1025. https://doi.org/10.1177/0030222820914678
Maccallum, F., Galatzer-Levy, I. R., & Bonanno, G. A. (2015). Trajectories of depression following spousal and child bereavement: A comparison of the heterogeneity in outcomes. *Journal of Psychiatric Research, 69*, 72–79. https://doi.org/10.1016/j.jpsychires.2015.07.017
Maciejewski, P. K., Zhang, B., Block, S. D., & Prigerson, H. G. (2007). An empirical examination of the stage theory of grief. *JAMA, 297*(7), 716–723. https://doi.org/10.1001/jama.297.7.716
Mathew, L. E. (2021). Braiding western and eastern cultural rituals in bereavement: An autoethnography of healing the pain of prolonged grief. *British Journal of Guidance & Counselling, 49*(6), 791–803. https://doi.org/10.1080/03069885.2021.1983158
McCoyd, J. L. M., Koller, J., & Walter, C. A. (2021). *Grief and loss across the lifespan: A biopsychosocial perspective* (3rd ed.). Springer.
McLean, E., Singer, J., Laurita, E., Kahler, J., Levin, C., & Papa, A. (2022). Perception of grief responses: Are maladaptive grief responses and the stages of grief

considered normal? *Death Studies, 46*(6), 1414–1423. https://doi.org/10.1080/07481187.2021.1983890
Morris, S., Fletcher, K., & Goldstein, R. (2019). The grief of parents after the death of a young child. *Journal of Clinical Psychology in Medical Settings, 26*(3), 321–338. https://doi.org/10.1007/s10880-018-9590-7
Neimeyer, R. A., Baldwin, S. A., & Gillies, J. (2006). Continuing bonds and reconstructing meaning: Mitigating complications in bereavement. *Death Studies, 30*(8), 715–738. https://doi.org/10.1080/07481180600848322
Neimeyer, R. A., Burke, L. A., Mackay, M. M., & van Dyke Stringer, J. G. (2010). Grief therapy and the reconstruction of meaning: From principles to practice. *Journal of Contemporary Psychotherapy, 40*(2), 73–83. https://doi.org/10.1007/s10879-009-9135-3
Neugarten, B. L. (1976). Adaptation and the life cycle. *The Counseling Psychologist, 6*(1), 16–20. https://doi.org/10.1177/001100007600600104
Ng, C. (2021). Meaning-oriented narrative reconstruction: Navigating the complexities of bereaved families. *British Journal of Guidance & Counselling, 49*(6), 804–813. https://doi.org/10.1080/03069885.2021.1983157
Nielsen, M. K., Carlsen, A. H., Neergaard, M. A., Bidstrup, P. E., & Guldin, M.-B. (2019). Looking beyond the mean in grief trajectories: A prospective, population-based cohort study. *Social Science & Medicine, 232*, 460–469. https://doi.org/10.1016/j.socscimed.2018.10.007
Ortiz, R., Kluwe, B., Lazarus, S., Teruel, M. N., & Joseph, J. J. (2022). Cortisol and cardiometabolic disease: A target for advancing health equity. *Trends in Endocrinology & Metabolism, 33*(11), 786–797. https://doi.org/10.1016/j.tem.2022.08.002
Oswald, A. J., & Powdthavee, N. (2008) Death, happiness, and the calculation of compensatory damages. *Journal of Legal Studies, 37*(2), S217–S251. https://doi.org/10.1086/595674
Parkes, C. M. (2013). Elisabeth Kübler-Ross, *On death and dying*: A reappraisal. *Mortality, 18*(1), 94–97. https://doi.org/10.1080/13576275.2012.758629
Penman, E. L., Breen, L. J., Hewitt, L. Y., & Prigerson, H. G. (2014). Public attitudes about normal and pathological grief. *Death Studies, 38*(8), 510–516. https://doi.org/10.1080/07481187.2013.873839
Polacek, L. C., Saracino, R. M., Walsh, L. E., Jutagir, D. R., Costas-Muniz, R., Applebaum, A. J., & Rosenfeld, B. (2023). How patients with advanced cancer conceptualize prognosis: A phenomenological qualitative inquiry. *Palliative Medicine, 37*(7), 1006–1015. https://doi.org/10.1177/02692163231173067
Potocnik, M., & Adum-Kyeremeh, K. (2022). Transformation of Ga death and funeral rites in Accra, Ghana. *Africa Today, 68*(3), 89–106. https://doi.org/10.2979/africatoday.68.3.05
Reischer, H. N., & Beverley, J. (2019). Diverse approaches to meaning-making at the end of life. *American Journal of Bioethics, 19*(12), 68–70. https://doi.org/10.1080/15265161.2019.1674419
Rupp, L., Seidel, K., Penger, S., & Haberstroh, J. (2023). Reducing dementia grief through psychosocial interventions: A systematic review. *European Psychologist, 28*(2), 83–94. https://doi.org/10.1027/1016-9040/a000501
Ryan, M. (2023). *Online bereavement: Using Facebook to process and cope with loss* [Doctoral dissertation, Fielding Graduate University]. https://www.proquest.com/dissertations-theses/online-bereavement-using-facebook-process-cope/docview/2784390944/se-2
Schuck, D. A., Hens-Piazza, G., & Sadler, R. (2020, June 1). Different faiths, same pain: How to grieve a death in the coronavirus pandemic. *The Conversation*. https://theconversation.com/different-faiths-same-pain-how-to-grieve-a-death-in-the-coronavirus-pandemic-138185
Schulz, R., & Aderman, D. (1974). Clinical research and the stages of dying. *OMEGA - Journal of Death and Dying, 5*(2), 137–143. https://doi.org/10.2190/HYRB-7VQK-VU9Y-7L5D
Seiler, A., von Känel, R., & Slavich, G. M. (2020). The psychobiology of bereavement and health: A conceptual review from the perspective of social signal transduction theory of depression. *Frontiers in Psychiatry, 11*. https://doi.org/10.3389/fpsyt.2020.565239
Shear, M. K., Ghesquiere, A., & Glickman, K. (2013). Bereavement and complicated grief. *Current Psychiatry Reports, 15*(11), 1–7. https://doi.org/10.1007/s11920-013-0406-z
Shear, M. K., Simon, N., Wall, M., Zisook, S., Neimeyer, R., Duan, N., Reynolds, C., Lebowitz, B., Sung, S., Ghesquiere, A., Gorscak, B., Clayton, P., Ito, M., Nakajima, S., Konishi, T., Melhem, N., Meert, K., Schiff, M., O'Connor, M.-F., First, M., Sareen, J., Bolton, J., Skritskaya, N., Mancini, A. D., & Keshaviah, A. (2011). Complicated grief and related bereavement issues for DSM-5. *Depression and Anxiety, 28*(2), 103–117. https://doi.org/10.1002/da.20780
Stroebe, M., Finkenauer, C., Wijngaards-de Meij, L., Schut, H., van den Bout, J., & Stroebe, W. (2013). Partner-oriented self-regulation among bereaved parents: The costs of holding in grief for the partner's sake. *Psychological Science, 24*(4), 395–402. https://doi.org/10.1177/0956797612457383
Stroebe, M., & Schut, H. (1999). The dual process model of coping with bereavement: Rationale and description. *Death Studies, 23*(3), 197–224. https://doi.org/10.1080/074811899201046
Stroebe, M., & Schut, H. (2015). Family matters in bereavement: Toward an integrative intra-interpersonal coping model. *Perspectives on Psychological Science, 10*(6), 873–879. https://doi.org/10.1177/1745691615598517
Stroebe, M., Schut, H., & Boerner, K. (2017). Cautioning health-care professionals: Bereaved persons are misguided through the stages of grief. *OMEGA - Journal of Death & Dying, 74*(4), 455–473. https://doi.org/10.1177/0030222817691870
Tyrrell, P., Harberger, S., Schoo, C., & Siddiqui, W. (2023). Kübler-Ross stages of dying and subsequent models of grief. In *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK507885/
Ugwu, U. T. (2023). Second funeral rituals and integration of the dead with the living among the Nawfia of Southeastern Nigeria. *International Journal of Modern Anthropology, 2*(20), 1331–1344. https://doi.org/10.4314/ijma.v2i20.3
Uriu, D., Toshima, K., Manabe, M., Yazaki, T., Funatsu, T., & Izumihara, A., Kashino, Z., Hiyama, A., & Inami, M. (2021). Generating the presence of remote mourners: A case study of funeral webcasting in Japan. *CHI '21: Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, Article No. 629, 1 – 14. https://doi.org/10.1145/3411764.3445617
Weisman, A. D. (1972). *On dying and denying: A psychiatric study of terminality*. Behavioral Publications.
Wolfelt, A. D. (2005). *Companioning the bereaved: A soulful guide for counselors & caregivers*. Companion Press.

17.4 Life Review, Successful Life, and a Good Death

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the process and purpose of life review
- Identify factors that contribute to life satisfaction
- Identify factors that predict a good death

Sondra is seventy-five years young. She's in good health and enjoys traveling, taking long walks, and spending time with neighbors and members of her synagogue. She lost her partner five years ago to heart disease and misses him terribly, but her faith and social supports provide comfort. She's optimistic about the future and wants to make the most of each day. She often thinks about sayings she has heard: "The unexamined life is not worth living," and "In the end, we regret only the chances we didn't take."

Statements like these contain a common theme—that life is something to be studied, perhaps with the idea of coming to some kind of conclusion or even making changes if we don't like what we discover. Sondra is engaging in a life review and considering factors that describe a "good" life and what that means. She may also come to explore the notion of a "good death."

Life Review

A **life review** is exactly what it sounds like—a thoughtful examination of our own life. You learned about one aspect of this topic in Chapter 16 Social and Emotional Development in Late Adulthood (Age 60 and Beyond), in relation to Erikson's ego integrity versus despair task. Erikson viewed this end-of-life evaluation as important for overall psychological well-being, even if its outcome exposed regrets. When we discover regrets, we can try to resolve them and take the end of our life in a more fulfilling direction.

For some people, a life review includes engaging in **legacy activities**, such as creating an artifact that represents their life and for which they want to be remembered. Examples include a photo album, scrapbook, cookbook, or letters written to loved ones. Participating in life review and legacy activities is associated with improvements in emotional distress, death preparedness, and perceived quality of life (Allen, 2009; Allen et al., 2014; Grewe, 2017; Ingersoll-Dayton et al., 2019; Keall et al., 2015; Pinquart & Forstmeier, 2012; Shin et al., 2023). When family members participate too, they report benefits such as an increased sense of meaning (Allen et al., 2014) and improved communication (Allen, 2009).

Similar to life review is **reminiscence**, the act of recalling and sharing memories and stories, typically pleasant ones. We often do this on an informal or short-term basis and to enhance social connections, happiness, and self-esteem (Keall et al., 2015; Shin et al., 2023), although it can also be a therapeutic activity. Studies of reminiscence therapy find it can bring improvements in perceived quality of life, emotional well-being, and contentment, as well as affirmation of relationships, particularly if couples participate together, and decreased anxiety about death (Ingersoll-Dayton et al., 2019; Pinquart & Forstmeier, 2012; Shin et al., 2023).

LINK TO LEARNING

It can be a pleasant experience to do reminiscence or life review activities with others, regardless of age.

- Learn more about different reminiscence therapy activities and games (https://openstax.org/r/104Reminiscence), such as the "Grab Bag" storytelling game and "Calendar Flashback."
- Read about reminiscence therapy activities (https://openstax.org/r/104DementiaGames) specifically for people with dementia.
- Explore suggestions for creating a legacy through legacy activities (https://openstax.org/r/104LegacyActivy), such as journaling and letter-writing.
- Legacy activities can also be done collaboratively with others; find more ideas for group legacy activities (https://openstax.org/r/104LegacyGroup) that can be done with people of any age.

A Successful Life

How do we define a successful life? First, we must distinguish a successful life from life satisfaction and ego integrity. Someone experiencing **life satisfaction** is content with their current circumstances. Someone who feels they've had a successful life looks positively at their past as a whole. That doesn't mean their life has been without disappointments and setbacks. Rather, given a realistic appraisal of both positive and negative events, the person integrates these into a whole that reflects feelings of competency (Filip et al., 2020; Haber, 2006; van der Kaap-Deeder et al., 2021; Van Hiel & Vansteenkiste, 2009). They may also come to terms with and learn from negative experiences or release regrets (Haber, 2006).

What makes a successful life is highly individual, since any two people are likely to define it differently (Figure 17.19). However, research has identified some common themes and elements associated with feelings of success. Some studies asked people open-ended questions about whether they felt their lives had been successful. Other research used structured inventories such as the Meaning in Life Questionnaire, which asks respondents to rate on a 7-point scale statements like "My life has a clear sense of purpose" and "I am always looking for something that makes my life feel meaningful" (Steger et al., 2006).

FIGURE 17.19 A successful life can encompass many characteristics, such as feeling productive or staying active. (credit: "I Remember Happy" by Fechi Fajardo/Flickr, CC BY 2.0)

Self-determination theory (Deci & Ryan, 2000) provides a framework for identifying some components of a successful life by emphasizing the value of intrinsic goals over extrinsic goals. Intrinsic goals such as autonomy and competence are believed to contribute more to lifelong personal growth (Deci & Ryan, 2000; Van Hiel & Vansteenkiste, 2009) and therefore are more relevant for defining a successful life. According to self-determination theory, these goals are characterized by autonomy or the freedom to make our own choices, competence or our achievement of personal goals, and relatedness or our feeling of being connected to others (Deci & Ryan, 2000; van der Kaap-Deeder et al., 2021; Van Hiel & Vansteenkiste, 2009). Let's look at these a little more closely.

Autonomy and Competence

The themes of autonomy and competence come up in Erikson's psychosocial stages and Bandura's concept of self-efficacy. In self-determination theory, however, autonomy primarily refers to the freedom to make our own choices, not necessarily the ability to perform tasks without assistance. Both autonomy and competence appear to be associated with achieving ego integrity (Filip et al., 2020) and better mental and physical well-being (Chen et al., 2015; Van Hiel & Vansteenkiste, 2009). However, autonomy isn't equally valued across cultures, which raises the question of whether it's truly associated with successful psychosocial outcomes. Some research has shown that in collectivistic cultures, being able to choose our own life experiences and make important decisions isn't strongly linked to having a positive view of our life (Choi et al., 2023; Lambert et al., 2022). However, other research suggests this connection is more complex. Cross-cultural studies indicate that Chinese, European, South American, and North American teenagers and adults all associate autonomy with well-being regardless of whether their larger culture values personal choice (Chen et al., 2015).

Feelings of competence don't come only from success. After being diagnosed with terminal cancer, computer science professor Randy Pausch delivered a life lessons speech known informally as "The Last Lecture." In it he described a situation in which his childhood football coach had pushed him hard during one practice, making him drill repeatedly:

> And when it was all over, one of the other assistant coaches came over and said, *yeah, Coach Graham rode you pretty hard, didn't he?* I said, *yeah.* He said, *that's a good thing.* He said, *when you're screwing up and nobody's saying anything to you anymore, that means they gave up*.... Your critics are your ones telling you they still love you and care (Pausch, 2007, p. 5)

Rather than interpreting criticism as a sign of failure and becoming discouraged, Pausch realized this feedback provided an opportunity to increase his competence and was able to use that insight throughout his life to achieve his goals and increase his chances of evaluating his life as successful.

Relatedness

Relatedness, the feeling of being connected to others, is also commonly viewed as part of a successful life (Figure 17.20). Our relationships include not only contact with others, but also the emotional connections we build and the extent to which we feel other people understand us. For example, in the excerpt from Pausch's speech, the coach's words sent the message that Pausch was respected, valued, and worthy of an honest opinion. This broad definition matters because it accounts for the variety of bonds in adult lives. Isolation, physical or emotional, may prevent people from feeling they have lived successful lives, perhaps because it makes them more likely to dwell on negative life events without being able to get reassurance from others (van der Keep-Deeder et al., 2022).

FIGURE 17.20 Relationships of every kind matter throughout our lives and help contribute to the sense that we have had a successful life. (credit: modification of work "Elderly Couple" by "foooomio"/Flickr, CC BY 2.0)

"Mr. J." was a fifty-three-year-old terminally ill man being interviewed for Kübler-Ross's research regarding the themes of grief when he said the following:

> You know, it's a wonderful feeling, but everywhere I have been and all through my life, people have liked me. I am profoundly thankful for that. I am humbly thankful. I have never gone out of my way, I don't think, to be a do-gooder. But I can find any number of people in this city who could point out times on various jobs that I helped them out. . . . But by the same token everybody I have ever known has helped me. I don't believe I have an enemy in the world. (Kübler-Ross, 1969, p. 135)

Mr. J looked back with satisfaction not only on what he had done for others, but also on what others had done for him. He clearly felt he had been successful at establishing connections throughout his life.

A Good Death

We've described a "good life." How do we define a good death? Many factors are relevant, including experience, relationships, community, culture, and history, and religious and medical resources. Before the twentieth century many people died of acute causes such as infectious diseases, and treatments for conditions like cancer weren't readily available. Death was generally public, meaning community members were often present helping the patient and family, and the process was managed by relatives instead of professionals (Cottrell & Duggleby, 2016). When professional help was needed, religious figures were often more likely to be called than doctors (Walter, 2003).

Cottrell and Duggleby (2016) describe the modern Western notion of a good death as one that is peaceful, dignified, pain-free, and occurring in old age, at home, with enough time to prepare (such as by drawing up a

will), but not so much time that the death is prolonged.

Pain and Suffering

The desire to be free of pain and suffering is a common theme in a good death in Korean (Kim, 2019), Buddhist (Dorji & Lapierre, 2022), Swiss (Borrat-Besson et al., 2022), Chinese (Liu & van Schalkwyk, 2018), and South African cultures (Daniels-Howell, 2022) as well as in diverse populations of elders in the United States (Cain & McClesky, 2019). There is no universal agreement about how this freedom should be accomplished, however.

In one study, Black and Latino adults in the United States viewed medical aid in dying (MAID) negatively, perhaps because their religious backgrounds emphasize suffering as spiritually necessary or because they were concerned about this aid being overused with minority populations (Cain & McClesky, 2019). Similarly, Buddhists and Muslims regard death as unavoidable and may reject aid in dying because they feel it violates that aspect of their faith (Dorji & Lapierre, 2022; Nadeem et al., 2017). Given the Christian belief that events are "in God's hands," aid in dying may be viewed as going against God's plan (Daniels-Howell, 2022). Kim (2019) cites data indicating that 90% of Korean elders support end-of-life measures and don't want to prolong life artificially; however, the Korean culture frowns on suicide, which may affect the way aid in dying is perceived. Judaism emphasizes the value and sacredness of human life, which may lead Jewish doctors to recommend more aggressive medical treatments and Jewish patients and families to request them (Braun et al., 2014). "In defining a good death across research on patients, loved ones, and health care providers, 81% feel that being free of pain is a top priority (Meier et al., 2016).

Autonomy

The related question whether a sense of control or autonomy is associated with a good death doesn't have a consistent answer either. In collectivistic cultures such as Japan's, the patient's specific wishes may not be solicited or heeded (Terunuma & Mathis, 2021), but in more individualistic cultures, respecting the patient's autonomy and individual preferences is seen as a fundamental part of a good death (Lang et al., 2022; Vanderveken et al., 2019, Borrat-Besson et al., 2022; Cain & McClesky, 2019).

In religious traditions that emphasize the inevitability of death, such as Buddhism and Islam, personal choice in the matter may be viewed as irrelevant (Dorji & Lapierre, 2022; Nadeem et al., 2017). In contrast, Israeli doctors indicated in one study that they feel their primary duty is to preserve life, which may cause them to place less emphasis on patient autonomy in end-of-life decisions (Braun et al., 2014). However, many cultures share the desire to be prepared for death—whether simply emotionally or tangibly, such as by making a will (Borrat-Besson et al., 2022; Dorji & Lapierre, 2022; Liu & van Schalkwyk, 2019; Nadeem et al., 2017) (Figure 17.21).

FIGURE 17.21 Many cultures share the ideal that a person should be emotionally ready to consider their own death. (credit: "Elderly Man Red Turban" by Amaury Laporte/Flickr, CC BY 2.0)

Respect

A good death can also include respectful treatment after death. In their recent study of COVID-19 pandemic deaths, Hernández-Fernández and Meneses-Falcón (2023) noted that health-care and funeral workers expressed concerns about not being able to treat bodies respectfully after death, partly because of practices intended to prevent the spread of disease (such as spraying the body with disinfectant), but also because the sheer number of deaths during the first year of the pandemic overwhelmed them.

Connections

Family relationships and friendships are another common theme across cultures. For example, Swiss, Chinese, and Korean research participants indicated that being with loved ones, especially children and grandchildren, was a high priority during the dying process (Borrat-Besson et al., 2022; Kim, 2019; Liu & van Schalkwyk, 2018). However, this isn't always possible. During the pandemic, many people died separated from their families, and even if families were present, they were likely wearing masks and other protective equipment, which may have created a sense of distance and increased distress for everyone.

The impact of the person's death on their family is also relevant. In the Confucian value system common to countries like Korea and China, having a good death includes feeling you have been a good parent and are not a burden to your family (Kim, 2019). For Muslims and others living in India and Uganda, a good death requires ensuring that the surviving family will be financially secure (Krikorian et al., 2020; Nadeem et al., 2017).

The Age of the Deceased

The concept of a "good death" often assumes that death happens in older age. However, that is not always the case. Parents of terminally ill children often experience distress at not being able to alleviate their child's pain and report not always receiving good communication from medical staff. Health-care workers report avoiding discussions about the child's impending death in a well-meaning but often unsuccessful attempt to prevent further distress (Daniels-Howell, 2022).

Children have less autonomy and understand death differently than adults, so we can't assume that adult standards for a good death apply to them. Studies suggest that health-care workers can improve the death experience for sick children and their families by treating the child not as a patient or diagnosis but as a

person (including allowing everyday childhood activities such as attending school and playing), communicating clearly with families, and providing as much family time as possible, such as by allowing parents and siblings to participate in the child's care if feasible (Broden et al., 2020; Daniels-Howell, 2022) (Figure 17.22).

FIGURE 17.22 Sick or dying children often benefit from spending as much time as possible with their family. (credit: "American medics treat a child in Camp Pannonia, Afghanistan" by Joseph Swafford, ISAF Headquarters Public Affairs Office/Wikimedia Commons, CC BY 2.0)

Spirituality and Religion

Religious and spiritual views may also help define a good death, regardless of what that religion is. Many religious and spiritual perspectives regard death as inevitable and controlled by a force outside the individual, and therefore not to be feared (Cottrell & Duggleby, 2016; Krikorian et al., 2020). In Buddhism, for example, death is a natural event to be approached calmly. Performing altruistic acts during life is believed to enhance progression toward enlightenment, so we are constantly preparing for death by being alive (Dorji & Lapierre, 2022). Engaging in specific religion-related practices may also contribute to a good death. In Hinduism, a good death is associated with rituals such as moving from the bed to the floor and fasting. These deeply held traditions are meant to prevent misfortune from happening to the dying person's family but may be hard to accomplish in hospital settings (Kim, 2019). However, lack of religious or spiritual beliefs does not necessarily indicate a "bad death." In fact, people at extreme ends of the religiosity continuum (i.e., people who are either very religious or very nonreligious) show similar acceptance of and lack of anxiety about death (Spitzenstätter & Schnell, (2023). People who are agnostic or atheistic tend to regard death simply as the end of existence, with no afterlife to be concerned about, and to regard life as being meaningful and valuable as a result. They may be distressed because they feel the language and rituals surrounding death have unwanted religious overtones, but do not typically adopt religious views in response (MacMurray & Fazzino, 2017)(Figure 17.23).

FIGURE 17.23 Sick or dying children often benefit from spending as much time as possible with their family. (credit: "American medics treat a child in Camp Pannonia, Afghanistan" by Joseph Swafford, ISAF Headquarters Public Affairs Office/Wikimedia Commons, CC BY 2.0)

Concluding Thoughts

Death can be a challenging topic, not only because it's associated with sadness, but also because it has many complex aspects and intersecting contexts. Dealing with death requires addressing the physical, psychological, social, cultural, and practical needs of the person who's dying and of their loved ones. Sometimes that calls for difficult conversations. Sometimes we may have to make choices we wouldn't want for ourselves, but in doing so we are honoring someone else's wishes. Sometimes we're called upon to give support to others when we may also need it. Even when we can regard death as the end of pain and suffering, or perhaps the attainment of a spiritual destiny, death is typically distressing.

However, it is an unavoidable part of life. Since we can't avoid it, we can try to understand some of the factors that affect the way people experience and cope with it. We can understand the options available to those who want to ensure their designated loved ones know what to do before and after their death. We can make ourselves more aware of cultural factors that may influence what people want the end of their lives to look like. We can use this information to help ourselves as well as others. Although it's hard to be fully prepared for death, we can use this knowledge to approach it with a sense of being informed and prepared for the challenges ahead.

References

Allen, R. S. (2009). The Legacy Project intervention to enhance meaningful family interactions: Case examples. *Clinical Gerontologist, 32*(2), 164–176. https://doi.org/10.1080/07317110802677005

Allen, R. S., Harris, G. M., Burgio, L. D., Azuero, C. B., Miller, L.A., Shin, H. J., Eichorst, M. K., Csikai, E. L., DeCoster, J., Dunn, L. L., Kvale, E., & Parmelee, P. (2014). Can senior volunteers deliver reminiscence and creative activity interventions? Results of the Legacy Intervention family enactment randomized controlled trial. *Journal of Pain and Symptom Management, 48*(4), 590–601. https://doi.org/10.1016/j.jpainsymman.2013.11.012

Ayebare, E., Lavender, T., Mweteise, J., Nabisere, A., Nendela, A., Mukhwana, R., Wood, R., Wakasiaka, S., Omoni, G., Kagoda, B. S., & Mills, T. A. (2021). The impact of cultural beliefs and practices on parents' experiences of bereavement following stillbirth: a qualitative study in Uganda and Kenya. *BMC Pregnancy and Childbirth, 21*(1), 443. https://doi.org/10.1186/s12884-021-03912-4

Borrat-Besson, C., Vilpert, S., Borasio, G. D., & Maurer, J. (2022). Views on a "good death": End-of-life preferences and their association with socio-demographic characteristics in a representative sample of older adults in Switzerland. *OMEGA - Journal of Death & Dying, 85*(2), 409–428. https://doi.org/10.1177/0030222820945071

Braun, M., Hasson-Ohayon, I., Hales, S., Zimmermann, C., Rydall, A., Peretz, T., & Rodin, G. (2014). Quality of dying and death with cancer in Israel. *Supportive Care in Cancer, 22*(7), 1973–1980. https://doi.org/10.1007/s00520-014-2163-x

Broden, E. G., Deatrick, J., Ulrich, C., & Curley, M. A. Q. (2020). Defining a "good death" in the pediatric intensive care unit. *American Journal of Critical Care, 29*(2), 111–121. https://doi.org/10.4037/ajcc2020466

Cain, C. L., & McCleskey, S. (2019). Expanded definitions of the 'good death'? Race, ethnicity and medical aid in dying. *Sociology of Health & Illness, 41*(6), 1175–1191. https://doi.org/10.1111/1467-9566.12903

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*(2), 216–236. https://doi.org/10.1007/s11031-014-9450-1

Chen, C., Lai, X., Zhao, W., & Chen, M. (2022). A good death from the perspective of healthcare providers from the internal medicine department in Shanghai: A qualitative study. *International Journal of Nursing Sciences, 9*(2), 236–242. https://doi.org/10.1016/j.ijnss.2021.11.002

Choi, Y.-K., Joshanloo, M., Lee, J.-H., Lee, H.-S., Lee, H.-P., & Song, J. (2023). Understanding key predictors of life satisfaction in a nationally representative sample of Koreans. *International Journal of Environmental Research and Public Health, 20*(18), Article 6745. https://doi.org/10.3390/ijerph20186745

Cottrell, L., & Duggleby, W. (2016). The "good death": An integrative literature review. *Palliative & Supportive Care, 14*(6), 686–712. https://doi.org/10.1017/S1478951515001285

Daniels-Howell, C. (2022). Caring for children with life-limiting illness in Bloemfontein, South Africa: Challenging the assumptions of the 'good death.' *OMEGA - Journal of Death & Dying, 85*(2), 317–344. https://doi.org/10.1177/0030222820944099

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Dellinger, M., & Poupart, A. E. (2021). The lessons Native American culture can teach us about resilience during pandemics and health care crises. *WMJ: Official publication of the State Medical Society of Wisconsin, 120*(S1), S80-S84. https://wmjonline.org/wp-content/uploads/2021/120/S1/S80.pdf
Dorji, N., & Lapierre, S. (2022). Perception of death and preference for end-of-life care among Asian Buddhists living in Montreal, Canada. *Death Studies, 46*(8), 1933–1945. https://doi.org/10.1080/07481187.2021.1872743
Filip, M., Lukavská, K., & Šolcová, I. P. (2020). Dialogical and integrated self in late adulthood: Examining two adaptive ways of growing old. *International Journal of Aging & Human Development, 90*(4), 337–362. https://doi.org/10.1177/0091415019831445
Grewe, F. (2017). The Soul's Legacy: A program designed to help prepare senior adults cope with end-of-life existential distress. *Journal of Health Care Chaplaincy, 23*(1), 1–14. https://doi.org/10.1080/08854726.2016.1194063
Haber D. (2006). Life review: Implementation, theory, research, and therapy. *International Journal of Aging & Human Development, 63*(2), 153–171. https://doi.org/10.2190/DA9G-RHK5-N9JP-T6CC
Hernández-Fernández, C., & Meneses-Falcón, C. (2023). Nobody should die alone. Loneliness and a dignified death during the COVID-19 pandemic. *OMEGA - Journal of Death & Dying, 88*(2), 550–569. https://doi.org/10.1177/00302228211048316
Ingersoll-Dayton, B., Kropf, N., Campbell, R., & Parker, M. (2019). A systematic review of dyadic approaches to reminiscence and life review among older adults. *Aging & Mental Health, 23*(9), 1074–1085. https://doi.org/10.1080/13607863.2018.1555696
Keall, R. M., Clayton, J. M., & Butow, P. N. (2015). Therapeutic life review in palliative care: A systematic review of quantitative evaluations. *Journal of Pain and Symptom Management, 49*(4), 747–761. https://doi.org/10.1016/j.jpainsymman.2014.08.015
Kim, E. (2019). Perceptions of good and bad death among Korean social workers in elderly long-term care facilities. *Death Studies, 43*(5), 343–350. https://doi.org/10.1080/07481187.2018.1478471
Krikorian, A., Maldonado, C., & Pastrana, T. (2020). Patient's perspectives on the notion of a good death: A systematic review of the literature. *Journal of Pain and Symptom Management, 59*(1), 152–164. https://doi.org/10.1016/j.jpainsymman.2019.07.033
Kübler-Ross, E. (1969). *On death and dying*. Macmillan.
Lambert, L., Karabchuk, T., & Joshanloo, M. (2022). Predictors of life satisfaction in the United Arab Emirates: Results based on Gallup data. *Current Psychology, 41*(6), 3827–3841. https://doi.org/10.1007/s12144-020-00873-3
Lang, A., Frankus, E., & Heimerl, K. (2022). The perspective of professional caregivers working in generalist palliative care on 'good dying': An integrative review. *Social Science & Medicine, 293*, Article 114647. https://doi.org/10.1016/j.socscimed.2021.114647
Liu, Y., & van Schalkwyk, G. J. (2019). Death preparation of Chinese rural elders. *Death Studies, 43*(4), 270–279. https://doi.org/10.1080/07481187.2018.1458760
MacMurray, N. J., & Fazzino, L. L. (2017). Doing death without deity: Constructing nonreligious tools at the end of life. In R. T. Cragun, C. Manning, & L. L. Fazzino (Eds.), *Organized secularism in the United States* (pp. 279-300). DeGruyter. https://doi.org/10.1515/9783110458657-014
Meier, E. A., Gallegos, J. V., Thomas, L. P., Depp, C. A., Irwin, S. A., & Jeste, D. V. (2016). Defining a good death (Successful dying): Literature review and a call for research and public dialogue. *The American Journal of Geriatric Psychiatry, 24*(4), 261–271. https://doi.org/10.1016/j.jagp.2016.01.135
Nadeem, M., Ashraf, F., & Hussain, I. (2017). Facing the evitable and the inevitable: Perspectives of good death amongst Muslim patients and health care providers in Pakistan. *Pakistan Armed Forces Medical Journal, 67*(2), 312–316. https://doi.org/10.51253/pafmj.v67i2.410
Pausch, R. (2007, September 18). *Really achieving your childhood dreams* [Address]. Carnegie Mellon University, Pittsburgh, PA. https://www.cs.cmu.edu/~pausch/Randy/pauschlastlecturetranscript.pdf
Pinquart, M., & Forstmeier, S. (2012). Effects of reminiscence interventions on psychosocial outcomes: A meta-analysis. *Aging & Mental Health, 16*(5), 541–558. https://doi.org/10.1080/13607863.2011.651434
Shin, E., Kim, M., Kim, S., & Sok, S. (2023). Effects of reminiscence therapy on quality of life and life satisfaction of the elderly in the community: A systematic review. *BMC Geriatrics, 23*(1), Article 420. https://doi.org/10.1186/s12877-023-04001-1
Spitzenstätter, D., & Schnell, T. (2023). The uncertain certainty: A mixed methods exploration of personal meanings of death and preliminary insights into their relationship with worldview. *OMEGA*, 302228231157135. https://doi.org/10.1177/00302228231157135
Steger, M., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*(1), 80–93. https://doi.org/10.1037/0022-0167.53.1.80
Terunuma, Y., & Mathis, B. J. (2021). Cultural sensitivity in brain death determination: A necessity in end-of-life decisions in Japan. *BMC Medical Ethics, 22*, Article 58. https://doi.org/10.1186/s12910-021-00626-2
van der Kaap-Deeder, J., Vermote, B., Waterschoot, J., Soenens, B., Morbée, S., & Vansteenkiste, M. (2021). The role of ego integrity and despair in older adults' well-being during the COVID-19 crisis: The mediating role of need-based experiences. *European Journal of Ageing, 19*(1), 117–129. https://doi.org/10.1007/s10433-021-00610-0
Vanderveken, L., Schoenmakers, B., & De Lepeleire, J. (2019). A better understanding of the concept "a good death": How do healthcare providers define a good death? *The American Journal of Geriatric Psychiatry, 27*(5), 463–471. https://doi.org/10.1016/j.jagp.2018.12.017
Van Hiel, A., & Vansteenkiste, M. (2009). Ambitions fulfilled? The effects of intrinsic and extrinsic goal attainment on older adults' ego-integrity and death attitudes. *International Journal of Aging & Human Development, 68*(1), 27–51. https://doi.org/10.2190/AG.68.1.b
Walter, T. (2003). Historical and cultural variants on the good death. *BMJ, 327*(7408):218–220. https://doi.org/10.1136/bmj.327.7408.218

Key Terms

active euthanasia administration of an outside agent, such as a lethal amount of a drug, to cause death
advance directive legal document that specifies what a person's wishes are in the event they are unable to express them at some point in the future
assisted suicide (also, medical aid in dying [MAID]) procedure in which a doctor knowingly prescribes a dose of medication knowing the patient intends to use it to end their life
bereavement experience of the death of a loved one
biological death permanent state of death in which vital organs have stopped working and cannot be resuscitated
blunting coping style associated with avoiding information, particularly bad news
brain death death that occurs when the brain has permanently stopped working
cardiopulmonary death death that occurs when heartbeat and breathing have stopped and cannot be restarted through cardiopulmonary resuscitation (CPR) or other means
clinical death potentially temporary state of death in which a person's vital organs have stopped working but could be resuscitated
complicated grief form of grief that lasts longer than is typical and is also associated with long-term adjustment problems; described as "prolonged grief disorder" in the *DSM-V-TR*
death anxiety person's concern about what awaits them after death
do not hospitalize (DNH) legal document stating that a person does not want to be hospitalized (and therefore receive unwanted medical treatment) in the event of serious illness
do not intubate (DNI) legal document stating that a person does not want breathing tubes inserted into their nose or mouth in the event they stop breathing
do not resuscitate (DNR) legal document stating that if a person's heart stops beating or breathing stops, they do not want CPR or other measures taken to revive them
dual-process model model of grieving consisting of two stages: loss orientation and restoration orientation; developed by Stroebe and Schut
durable power of attorney for health care legal document authorizing a specific person to make health-care decisions for someone else
dying trajectory pathway to death that varies on dimensions such as the nature and rate of decline
euthanasia act of ending life in a painless manner to relieve pain and suffering
excess mortality number of deaths above what would typically occur in a given time period
executor person in charge of filing relevant paperwork and fulfilling the conditions in someone's will
grief internal, emotional reaction to loss
health-care proxy person legally authorized to make health-care decisions for someone, or a legal document that gives a person that authority
home care medical services provided in the patient's residence
hospice care type of care provided if a person's condition is uncurable or treatment would be too stressful; includes managing physical symptoms, including pain, as well as addressing the spiritual and emotional needs of the patient and their loved ones
intestate circumstance of dying without a will
Kübler-Ross's themes of grief cognitive, emotional, and behavioral reactions to our own impending death, encompassing denial, anger, bargaining, depression, and acceptance
legacy activities activities in which a person creates an artifact that represents their life and for which they want to be remembered, such as a photo album, scrapbook, cookbook, or letters written to loved ones
life review thoughtful examination of our own life, often focused on integrating both positive and negative memories into a coherent whole
life satisfaction contentment with our current circumstances
living will legal document specifying a person's wishes regarding life-sustaining medical treatment in the event they are unable to express these wishes when treatment is needed

loss orientation reaction to loss in which the bereaved person addresses the emotional aspects of the loss by accepting the situation and sharing grief with others
middle knowledge intermediate step of grieving in which a person knows a loss is coming or has occurred but has not fully accepted the reality of it
monitoring coping style characterized by the seeking out of information
mourning outward, behavioral manifestation of grief
outgroup bias negative feelings about people we feel are different than us
palliative care type of medical care that manages symptoms and relieves pain but does not try to cure the underlying medical condition
passive euthanasia withdrawal or withholding of potentially life-sustaining treatment
probate court type of legal court that handles matters related to wills and guardianships
quality of life person's perception of how good their life is in the context of their values, goals, and cultural norms
rationing of care practice of limiting the use of health-care resources for patients who have little or no chance of recovery
reminiscence recollection and sharing of memories and stories, typically pleasant ones
restoration orientation reaction to loss in which the bereaved person copes with the changes brought about by a loved one's death, including changes to or the addition of relationships and roles
social death exclusion from social interactions and considerations; when a person is viewed as not being part of society
terror management theory theory that when our sense of self is threatened, we try to preserve it by becoming more committed to cultural values and showing more outgroup bias
thanatologist researcher who studies the biological, psychological, and/or social aspects of death
will legal document containing instructions for what to do with a person's assets, property, and dependents after death

Summary

17.1 Biological, Psychological, and Social Aspects of Death and Dying

- Death can involve not just death of the physical body, but also loss of the self and relationships. Death can also induce feelings of anxiety and loneliness.
- The experience of death can vary considerably. Different causes of death have different trajectories that vary in terms of how sudden death occurs and whether decline is steady or fluctuates.
- Life expectancy, how long a person's likely to live, is influenced by a combination of factors, including behavior and lifestyle. Life expectancy also varies by race/ethnicity and geographic location.
- Psychosocial aspects of death include coping with bad news as well as dealing with the discomfort many people feel when talking about death. Some people prefer to get as much information as possible when faced with bad news, but others try to avoid it.
- Culture can influence how people view death, including their opinions on brain death, euthanasia, and organ donation. Cultural factors can include collectivistic versus individualistic orientations, religious/spiritual beliefs, and views about gender roles. Having religious or spiritual beliefs is often associated with positive feelings about death as going to "a better place," but this can also put stress on people to accomplish certain tasks while alive. People without religious or spiritual beliefs don't appear to fear death more than people with strong religious or spiritual beliefs.

17.2 End-of-Life Care

- Care at the end of life can be provided in the hospital, at home, or in hospice facilities. Each setting has pros and cons related to autonomy and privacy.
- The hospice philosophy regards death as a normal part of life and focuses on making the dying person comfortable and relieving pain rather than trying to cure the patient.

- The end of life can involve several important decisions, such as what to do with one's possessions, what kind of care a person wants or doesn't want, and who gets to make decisions if the patient is unable to do so. Formalizing these decisions in legal documents called advance directives can reduce arguments and uncertainty.
- Ethical issues related to death often involve questions about euthanasia and assisted suicide. The legality of euthanasia and assisted suicide varies from place to place around the world and sometimes within countries (e.g., the United States).

17.3 Coping with Death

- Grief is the emotional response to loss. There are several theories about what grief looks like; some theories propose grief is a series of stages or themes that people progress through, others regard it as a narrative, and others describe grief as a process of emotional adjustment and orientation.
- Contextual factors can influence the experience of grief. Deaths that are sudden, involve a child, or are associated with stigma can produce grief that's harder to resolve than deaths that occur after a long illness, involve an older adult, or are socially recognized.
- Grief involves a physical response as well as an emotional one, putting the bereaved at risk for health problems associated with stress and impaired immune system functioning.
- Rituals such as funerals can be comforting and provide a sense of closure. Specific rituals and practices vary by culture. Technology such as videoconferencing and social media offers opportunities for people who can't be there in person to participate in these rituals as well.

17.4 Life Review, Successful Life, and a Good Death

- A life review, a thoughtful examination of one's life, is often associated with good outcomes such as decreased emotional distress and improved quality of life. Even if a life review turns up unhappy memories, it may be possible to resolve them.
- Defining a "successful life" is highly individual, but often involves having a sense of purpose, feelings of autonomy and competence, and close connections with other people.
- Similarly, defining a "good death" is somewhat individual, but typically involves wanting to be free of pain, having loved ones present, feeling respected, and having autonomy. Cultural factors can influence the degree to which these are prioritized.

Review Questions

1. A person being treated by others as though they are no longer living, and thus are no longer a part of society, is experiencing _____.
   a. sociological exile
   b. ostracism
   c. social death
   d. psychosocial banishment

2. The notion that people try to preserve their sense of identity when faced with their own pending mortality is called
   a. terror management theory
   b. ingroup bias
   c. loss aversion
   d. scapegoating

3. To what does the term "terminal decline" refer?
   a. lack of attention paid to people diagnosed with a terminal illness
   b. decrease in physical and cognitive functioning in the last five years of life
   c. negative feelings caused by social death

d. irreversible psychological changes caused by aging

4. In 2019, the most common cause of death worldwide was
a. type 2 diabetes
b. infectious disease
c. malnutrition
d. heart disease

5. The term "excess mortality" refers to what aspect of death, statistically?
a. the number of deaths per year from avoidable causes
b. the number of deaths per year from medical errors
c. the difference in causes and rates of death between countries
d. the number of deaths above what would typically occur in a given time period

6. Jason knows that he does not take care of his teeth very well. He does not brush them as much as he should and rarely uses dental floss. He occasionally has minor tooth pain but tries to ignore it until it goes away. Jason ignores the letters from his dentist that he is due for a cleaning and check-up, and keeps delaying the task of scheduling an appointment. What coping style is he using?
a. monitoring
b. blunting
c. terror management
d. rationing of care

7. In many African countries, AIDS is often not reported as an official cause of death due to what reason?
a. the stigma associated with AIDS
b. fear of angering the deceased
c. the collectivistic nature of the culture
d. the fear of government intervention in communities with higher rates of AIDS

8. Christianity and Islam both regard God as sovereign. In these religions, how are end-of-life treatments and euthanasia generally regarded, and why?
a. positively, because they represent man-made miracles
b. positively, because they relieve pain and suffering
c. negatively, because they produce more pain and suffering
d. negatively, because they go against "God's will"

9. In the United States, most deaths occur in what type of facility?
a. hospice facilities
b. nursing homes
c. hospitals
d. homes

10. Following a person's DNR (do not resuscitate) order is an example of _____.
a. active euthanasia
b. passive euthanasia
c. hospice care
d. palliative care

11. What legal document specifies the types of life-sustaining medical treatment a person does or does not want?

a. living will
b. durable health-care power of attorney
c. DNR order
d. health-care proxy

12. What type of medical care manages symptoms and relieves pain but does not try to cure the underlying medical condition?
a. hospice care
b. nursing home care
c. palliative care
d. proactive care

13. For Aboriginal Australians, participating in death-related activities such as providing comfort to the bereaved and remembering the dead , sometimes through the use of social media (particularly Facebook) is called
a. sorry business
b. intermediary mourning
c. sitting shiva
d. mortality manifestation

14. Elevated levels of the hormone _____, which may occur in people facing stressful situations like grief, are associated with health problems such as diabetes and high blood pressure.
a. adrenaline
b. cortisol
c. vasopressin
d. leptin

15. In the dual-process model of grief, the bereaved person addresses the emotional aspects of the death during _____ orientation.
a. mortality
b. restoration
c. transcendence
d. loss

16. According to self-determination theory, people who lack _____ may not feel they have lived successful lives, perhaps because it makes them more likely to dwell on negative life events without being able to get reassurance from others
a. competence
b. connectedness
c. autonomy
d. collectivism

17. The recollection and sharing of memories and stories, typically pleasant ones, is called
a. death preparedness
b. activity theory
c. reminiscence
d. ego integrity

18. What theory emphasizes the value of intrinsic goals in contributing to lifelong personal growth and feelings of having lived a successful life?

a. Bandura's theory of self-efficacy
b. self-determination theory
c. terror management theory
d. the dual-process model

19. The _____ faith regards human life as valuable and sacred, which may lead to more aggressive medical treatments being used or requested by physicians, patients, and families who adhere to these beliefs.
a. Buddhist
b. Catholic
c. Hindu
d. Jewish

Check Your Understanding Questions

20. Explain the difference between biological death, clinical death, cardiopulmonary death, and brain death.

21. Describe the dying trajectories initially proposed by Glaser and Strauss and later added to by Lunney. Drawing pictures of them is fine as long as you describe what is happening in the pictures.

22. According to terror management theory, how do people react when they feel their sense of self is being threatened, such as by thoughts of their own death?

23. What factors influence how comforting religion can be when coping with death?

24. How do individualistic and collectivistic cultures define the role of the patient, family, and doctor in making end-of-life decisions?

25. What are the basic goals and practices of hospice care?

26. Explain the difference between a will, a living will, and a health-care proxy.

27. Explain the difference between active and passive euthanasia, giving a specific example of each.

28. Explain the difference between grief, mourning, and bereavement.

29. What are some of the physical effects of grief and why do they occur?

30. Explain the similarities and differences between life review and reminiscence.

31. What factors contribute to life satisfaction?

Personal Application Questions

32. How do the cultural or religious beliefs that you grew up with influence your views on death and dying? Reflect on a time when you encountered a different perspective on death—how did it challenge or reinforce your own beliefs?

33. Reflect on the role social relationships play in the end-of-life experience. How important do you think it is for people to maintain strong social connections during their final days? How would you want your social circle to support you if you were facing the end of your life?

34. After learning about the differences in life expectancy across the world, how do you feel about the factors that influence these disparities? Do you think individuals have a significant level of control over their own life expectancy? Why or why not?

35. What do you think about the use of brain death as a criterion for determining death? Are your views shaped by any views of the culture(s) you identify with? If so, how?

36. Reflect on your thoughts about the different care options available at the end of life, such as hospital care, home care, or hospice. Which option would you prefer for yourself or a loved one? Why do you think this option aligns best with your values and beliefs?

37. Consider the difficult decisions that dying individuals and their families often face, such as whether to continue treatment, opt for palliative care, or follow a DNR order. How would you approach these decisions if you were in the position of making them for a loved one? What factors would influence your choices?

38. End-of-life care often involves complex moral and ethical considerations, such as the choice between prolonging life and ensuring quality of life. Reflect on a situation where you might have to weigh these considerations. How would your personal, cultural, or religious values impact your decision?

39. Reflect on your personal experiences with grief. How did you process and cope with your emotions during this time? Consider how your experiences align or differ from the theories of grief discussed in this section, such as Kübler-Ross's themes or the dual-process model.

40. Think about a time when someone you knew experienced a significant loss. How did you or others provide support during their grieving process? What actions or behaviors seemed particularly helpful or unhelpful? Reflect on how what you've learned in this section might change or reinforce how you support others in the future.

41. Imagine you were asked to help someone create a meaningful way to remember and honor a loved one who has passed away. What kind of memorial or ritual would you suggest? Why do you think this would be meaningful to the person who is grieving?

42. Reflect on your thoughts regarding the concept of a life review. If you were to engage in a life review today, what aspects of your life would you focus on, and why? How might this process influence your sense of fulfillment or areas where you feel you need growth?

43. Consider what a "successful life" means to you. Which factors, such as autonomy, competence, or relationships, contribute most to your personal definition of success? How do these align with the broader themes discussed in this section?

44. Think about how you would like to be remembered after you pass away. What legacy activities might you consider engaging in to leave a lasting impact on those you care about? Why are these activities meaningful to you?

Essay Questions

45. In your own words, define death from a biological, psychological, and social perspective. How do these perspectives interact, and why is it important to consider all three when discussing the concept of death?

46. What are the most common causes of death by age, at least in the United States?

47. Describe how Christianity, Buddhism, Islam, and Judaism each view death.

48. Examine how cultural beliefs and practices influence decisions about end-of-life care, including the acceptance or rejection of hospice care, use of advance directives, and attitudes toward euthanasia and assisted suicide.

49. Discuss the importance of clear communication between patients, families, and health-care providers in the context of end-of-life care. How can effective communication prevent misunderstandings and ensure that the patient's wishes are honored?

50. Discuss the psychological process of dying, focusing on the various ways individuals cope with the awareness of their impending death. How do different coping mechanisms, such as Kübler-Ross's stages of grief or other models, help individuals come to terms with death? Provide examples to illustrate how people might progress through these stages or employ these mechanisms. Finally, reflect on the value of

Kübler-Ross's research, citing some of its limitations.

51. Analyze the concept of a "good death" as presented in the text. What are the key elements that define a good death, and how might these differ across cultures or individual preferences? Reflect on how personal autonomy and respect for cultural traditions can both play a role in shaping end-of-life experiences.

ANSWER KEY

Chapter 1

1. b **3.** d **5.** b **7.** d **9.** a **11.** d **13.** a **15.** b **17.** d

Chapter 2

1. a **3.** a **5.** d **7.** a **9.** d **11.** a **13.** b **15.** c **17.** a **19.** a **21.** d

Chapter 3

1. a **3.** b **5.** a **7.** b **9.** d **11.** d **13.** c **15.** d **17.** b **19.** b

Chapter 4

1. d **3.** a **5.** b **7.** a **9.** c **11.** c **13.** c **15.** a

Chapter 5

1. c **3.** c **5.** c **7.** a **9.** d **11.** b **13.** b **15.** c **17.** a **19.** c **21.** b

Chapter 6

1. b **3.** d **5.** c **7.** a **9.** d **11.** c **12.** d **14.** c

Chapter 7

1. a **3.** c **5.** d **7.** a **9.** a **11.** b **13.** a **15.** a **17.** a **19.** a

Chapter 8

1. c **3.** a **5.** d **7.** d **9.** a **11.** b **13.** a **14.** a **15.** c **17.** b **19.** c

Chapter 9

1. c **3.** b **5.** b **7.** a **9.** d **11.** c **13.** d **15.** b

Chapter 10

1. b **3.** b **5.** a **7.** d **9.** c **11.** d **13.** d **15.** a **17.** a **19.** b **21.** c

Chapter 11

1. b **3.** d **5.** c **7.** d **9.** d **11.** b **13.** b **15.** a **17.** a **19.** a **21.** c

Chapter 12

1. d **3.** c **5.** a **7.** a **9.** d **11.** a **13.** b **15.** a

Chapter 13

1. d **3.** a **5.** c **7.** b **9.** c **11.** d **13.** c **15.** a **16.** b **17.** c **19.** d **21.** a

Chapter 14

1. c **3**. b **5**. d **7**. c **9**. a **11**. b **13**. b **15**. c **17**. d

Chapter 15

1. c **3**. c **5**. d **7**. c **9**. d **11**. a **13**. d **15**. c **17**. a **19**. d

Chapter 16

1. c **3**. c **5**. c **7**. a **9**. a **11**. c **13**. a **15**. d

Chapter 17

1. c **3**. b **5**. d **7**. a **9**. c **11**. a **13**. a **15**. d **17**. c **19**. d

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