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1

Introduction to Adolescent Development

Learning Objectives

1.1 Discuss the historical origins of adolescence and evidence for popular stereotypes about adolescents.

1.2 Analyze the developmental processes, contexts, and timing of adolescence and emerging adulthood.

1.3 Summarize theoretical approaches to studying adolescent development.

1.4 Describe methods and designs used to study adolescent development.

1.5 Explain the scope of applied developmental science and some of the challenges that arise in this field.

Chapter Contents

Imagine a rapid period of change, in which you grow taller and heavier and take on new body proportions that feel strange and uncomfortable. Your brain changes radically, influencing how you view the world around yourself and sometimes making you respond to others in ways that you don't expect and perhaps may regret. You become better able to think and reason but may find yourself focusing on your self-consciousness, worrying about your appearance, replaying what you should have said in response to a friend or teacher, and fearing that others will notice your faults. Suddenly your friends become life rafts that keep you from drowning in the tumultuous surroundings and are essential to your very survival. Sound familiar? If you're like most people, you'll probably answer, "In some ways, yes, and some ways, no." These changes occur during a period of life known as **adolescence**, the transition from childhood to adulthood. Although all young people undergo a myriad of physical, cognitive, and social changes as they progress through adolescence, not everyone experiences the changes as chaotic. Instead, some young people undergo relatively smooth transitions. In this book we will examine the developmental changes that occur during adolescence as well as variations in young people's experiences.

HISTORY OF ADOLESCENCE

The transition from childhood to adulthood is gradual, occurring over many years. Most people take that idea for granted. However, adolescence as we know it today is a new concept (Baxter, 2008). Although philosophers speculated about development beyond childhood, it was not until the late 19th century that adolescence became recognized as a distinct period in life.

Early History of Adolescence

In ancient Greece in the fourth century, Plato proposed several stages in the lifespan, including a period between childhood and adulthood. Plato argued that childhood education should emphasize sports and music because children's minds are undeveloped. Adolescents become capable of reasoning and therefore should study science and mathematics. Aristotle, a student of Plato, described three 7-year periods of maturation that correspond to current views of development. The period Aristotle referred to as *infancy* spanned from birth to age 7 years. *Boyhood* comprised ages 7 to 14 and *young manhood*, ages 14 to 21. Specifically, Aristotle proposed that reasoning may first emerge in boyhood and develops through young manhood, at age 21. Similar to current views of adolescence, Aristotle viewed independent

decision-making and the ability to carry out one's choices as a marker of maturity (Lerner & Steinberg, 2009). Of course, the labels Aristotle chose for his developmental periods are sexist in today's world, but at the time Aristotle wrote, virtually all theory and research were based on male models. As we will discuss, gender—and race as well as other characteristics—influence people's experiences and development (Ghavami, Katsiaficas, & Rogers, 2016). For example, theories created solely from examinations of boys and men often cannot adequately account for girls' and women's development.

Although philosophers Plato and Aristotle theorized about the unique nature of childhood and adolescence, for centuries children were viewed and treated as miniature adults and expected to work alongside adults (Aries & van den Berg, 1978). About 1,500 years passed before the term *adolescence* was first used. A derivative of the Latin word *adolescere*, meaning to grow into maturity, was used in the 15th century (Lerner & Steinberg, 2009). In the 18th century, Jean-Jacques Rousseau defined three stages in maturation. The first stage is birth to age 12, in which children are guided by their impulses. Reasoning develops in the second stage (age 12 to 16) and individuals mature cognitively and emotionally in the third stage (age 16 and to about 20). Rousseau explained that during the adolescent years, reasoning begins to override and inhibit impulses and young people mature. However, it was about a hundred years later, in the late 19th century, that the term *adolescence* became commonly used (Kett, 2003). It was a shift in societal conditions that led adolescence to be defined as it is today—a distinct period in life.

The Age of Adolescence

Between 1890 and 1920, a number of social changes came together to create the concept of adolescence that we have today. At the end of the 19th century, the Industrial Revolution influenced the nature of work and family life in the United States as many people moved from working on farms to urban factories. As the demand for labor rose, children and adolescents began to work in factories and coal mines. Often preferred because they were less expensive than adults, children and adolescents routinely worked long hours and few U.S. states regulated children's work.

As the Industrial Revolution progressed and more jobs became mechanized, the need for unskilled labor fell. Adults replaced children and adolescents as unskilled labor positions declined. In addition, the demand for skilled labor, which required schooling, rose. At the same time, a growing body of youth workers, educators, and professionals argued that children did not belong in the adult workplace and must be protected from the hazards of the adult workplace.
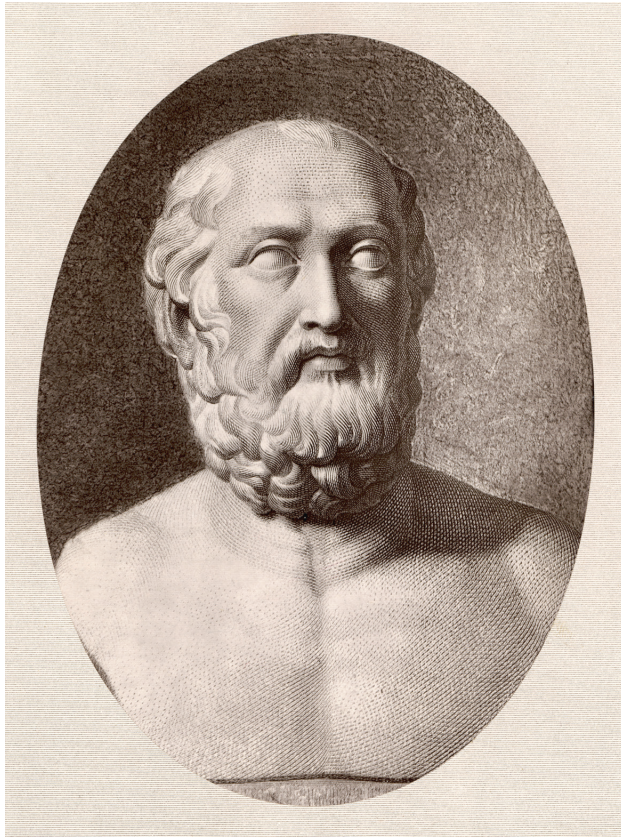
Greek philosopher Plato (left), disciple of Socrates, and classic philosopher and developmental theorist, Aristotle.
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Science History Images / Alamy Stock Photo

Soon many U.S. states created laws prohibiting child employment and limiting the hours that young adolescents can work (Kett, 2003).

Likewise, before 1890, few U.S. states required children to attend school. Between 1890 and 1920, all U.S. states passed laws requiring students to attend both primary and secondary school. In 1890, only about 5% of adolescents age 14 to 17 attended school; this number rose to 30% by 1920 and to 51% by 1930 (see Figure 1.1) (National Center for Education Statistics, 2017). As adolescents were separated from adults and grouped with other adolescents, it became increasingly clear that they are different from adults—and current conceptions of adolescence emerged.
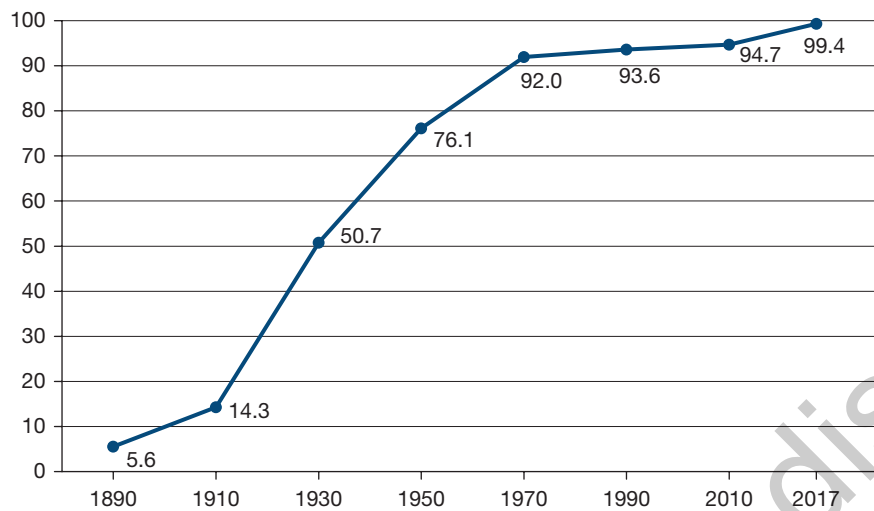
Adolescence as a Period of Storm and Stress

While the creation of labor and compulsory education laws marked adolescence as distinct from adulthood (Lapsley, Enright, & Serlin, 1985), the invention of adolescence, as we know it, is attributed to G. Stanley Hall (1844–1924). Often referred to as the father of adolescence, Hall is credited with beginning the scientific study of adolescence. In 1904, he wrote a two-volume set, titled *Adolescence: Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education*, in which he defined adolescence as a period of "storm and stress." Hall (1904) believed that storm and stress were inevitable and extreme upheaval was triggered by puberty, the biological transition to reproductive maturity, and therefore universal.

Hall based his theory on then-popular recapitulation theory, based on Lamarckian evolutionary theory. He held that memories and acquired characteristics can be inherited from generation to generation and that the development of the individual recapitulates or reenacts the development of the human species as a whole (Buchanan & Bruton, 2016). Hall explained that adolescents' extreme volatility is inherited and reflects a time in human history characterized by upheaval and disorder that corresponded to the birth of civilization. Therefore, intense turmoil, such as serious depression, severe troubles with parents, and extreme delinquent activity, was to be expected and was a sign of normal healthy development, triggered by puberty. Lamarckian evolution and recapitulation theory have both been discredited in favor of Darwinian evolution and many scholars reject Hall's

FIGURE 1.1

High School Enrollment Trends, 1890–2017

extreme views on adolescence (Youniss, 2006). Yet Hall's premise that adolescence is a period of storm and stress, rooted in biology, remains a popular view (Arnett, 2006).

Research suggests that, contrary to Hall's view, turmoil is not universal or healthy (Buchanan & Bruton, 2016). For example, emotional volatility or moodiness may become more common during adolescence, particularly early adolescence, but, as we will discuss throughout this book, most young people function well and maintain close relationships with their parents. In one classic study, adolescents from 10 countries (Australia, Bangladesh, Germany, Hungary, Israel, Italy, Japan, Taiwan, Turkey, and the United States) reported that they were usually

Most adolescents sometimes feel sad, but adolescence is not the period of turmoil G. Stanley Hall envisioned.
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happy, felt that they got along with their parents, and felt good about their progress toward adulthood (Offer, Ostrov, Howard, & Atkinson, 1988). Most adolescents engage in some risk behaviors, such as extreme sports and experimentation with alcohol, and some problems, such as substance abuse, may emerge during adolescence. However, for the majority of adolescents, risk behaviors are mild and temporary, and most adolescents do not experience serious problems (Boyer & Byrnes, 2016; Lerner et al., 2015a). Instead, many researchers who study adolescence adopt a modified storm-and-stress view in which problems are viewed as more likely to emerge during adolescence but are not inevitable (Arnett, 1999).

Although puberty and biological changes undoubtedly influence adolescents' experiences, environmental influences also play a role. Moreover, the theory of recapitulation, which underlay Hall's explanation for development, has long been debunked in favor of Darwinian evolution. Hall's view of adolescence as a universal, biologically based, period of extreme storm and stress is not supported by research, yet his view of the nature of adolescence has influenced popular culture (Hollenstein & Lougheed, 2013).

Stereotypes About Adolescence

Most adults agree with statements such as "Adolescence is a difficult time of life" and adolescents "will be more difficult to get along with" (Hines & Paulson, 2006). For example, one recent study followed adolescents and their parents during adolescence,

from fifth grade through eighth grade (Göllner et al., 2017). Over the 3-year period, parents viewed their adolescents as becoming less agreeable and conscientious (i.e., less "nice"), whereas the adolescents perceived no change. However, like parents, young people often endorse storm and stress notions, and such beliefs can create self-fulfilling prophecies, whereby adolescents' expectations influence their behavior (Buchanan & Bruton, 2016). Adolescents' conceptions of adolescence influence their behavior. Specifically, one study of boys followed from seventh to ninth grade found that those who expected adolescence to be a period of declining relationships with parents experienced increases in risk-taking over the transition from middle to high school (Qu, Pomerantz, McCormick, & Telzer, 2018). The more they saw adolescence as a time of ignoring family, the more their risk-taking increased.

However, conceptions of adolescence and expectations for adolescent behavior are culture bound. For example, U.S. adolescents were more likely than Chinese adolescents to report that adolescence is a time of decreased family responsibility and heightened school disengagement and peer orientation; these beliefs predicted a rise in disengagement from school in U.S. youth over the seventh and eighth grades (Qu, Pomerantz, Wang, Cheung, & Cimpian, 2016). Cultural values in North American and other Western countries tend to emphasize individuality and view development as a process of becoming independent, whereas Asian and non-Western cultures tend to emphasize collectivism, in which individuals develop close supportive ties with their family and community (Markus & Kitayama, 2010). Cultural values shape adolescents' experiences and their expectations for development.

Conceptions of adolescence are culture bound.
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THINKING IN CONTEXT 1.1

1. To what extent was your adolescence stormy and stressful? Explain. How well does your experience match Hall's perspective?

2. How might cultural values, such as individualism or collectivism, influence how young people experience adolescence? What kinds of activities and experiences might boys and girls have growing up in a culture that values independence as compared with community? What similarities and differences might you expect?

APPLY 1.1

As a child, Megan was easygoing, well liked, and kind to everyone. Now, at age 14, it's a different story. Megan says she hates her parents, gets into fistfights at school, and has started smoking marijuana with her 18-year-old boyfriend. Megan's parents are desperate to know: "Is this normal? Do all adolescents go through this?" How do you respond?

REVIEW 1.1

1. What are the origins of the term *adolescence*?

2. Why is 1890–1920 called the Age of Adolescence?

3. How did Hall describe adolescence?

4. What evidence is there for adolescent storm and stress?

5. What are some of the ways that adolescents are stereotyped?

ADOLESCENT DEVELOPMENT

A central tenet of development is that we grow and change throughout our lives, from conception to death, as shown in Figure 1.2 (Sawyer, Azzopardi, Wickremarathne, & Patton, 2018). Adolescence is a distinct period of the lifespan, but its boundaries have been a source of debate. For example, Hall (1904)

defined adolescence as a period ranging from age 14 to 24 years. More than 50 years ago, the World Health Organization proposed that adolescence spanned from 10 to 20 years of age, noting that although it commenced with puberty, the endpoint was less well defined (World Health Organization, 1977). The United Nations has defined adolescence as the period between 10 and 19 years of age (Kuruvilla et al., 2016). The U.S. Census Bureau specifies 12 to 19 years in their definition and the Centers for Disease Control and Prevention generally marks adolescence as high school age (ninth to twelfth grade, or about age 14 to 18) (Centers for Disease Control and Prevention, 2018; U.S. Bureau of the Census, 2018). Researchers have recently proposed age 10 as the beginning and age 24 (Sawyer et al., 2018) or 25 (Curtis, 2015) as the end of adolescence. These varying ages illustrate the concept that the boundaries of adolescence are a social construction (Linders, 2017). That is, the beginning and the end of adolescence are not set in stone; rather, they vary depending on the characteristics ascribed to the period.

Early, Middle, and Late Adolescence

Adolescence is characterized by biological and social transitions. The onset of puberty, the transition to biological maturity, often marks the beginning of adolescence. The end of adolescence is often marked by role transitions and the adoption of adult roles, such as, historically, marriage. Today, the end of adolescence is more vague and influenced by individuals' surroundings and experiences, occurring at different times for different people.

As we have discussed, there is a lack of consensus on the beginning and end of adolescence. For our purposes, we will define the phases of adolescence as follows:

- **Early adolescence** (age 10 to 14), corresponding roughly to the middle or junior high school years in the U.S. school system.

- **Middle adolescence** (age 14 to 16), corresponding to the first half of high school in the United States.

- **Late adolescence** (age 16 to 18), corresponding to the later high school years.

- **Emerging adulthood** (age 18 to 25), not a period of adolescence, but a period between adolescence and adulthood, corresponding to postsecondary education (discussed next).

The phases of adolescence overlap because this period is characterized by variability. Adolescents

FIGURE 1.2

Ages in Life
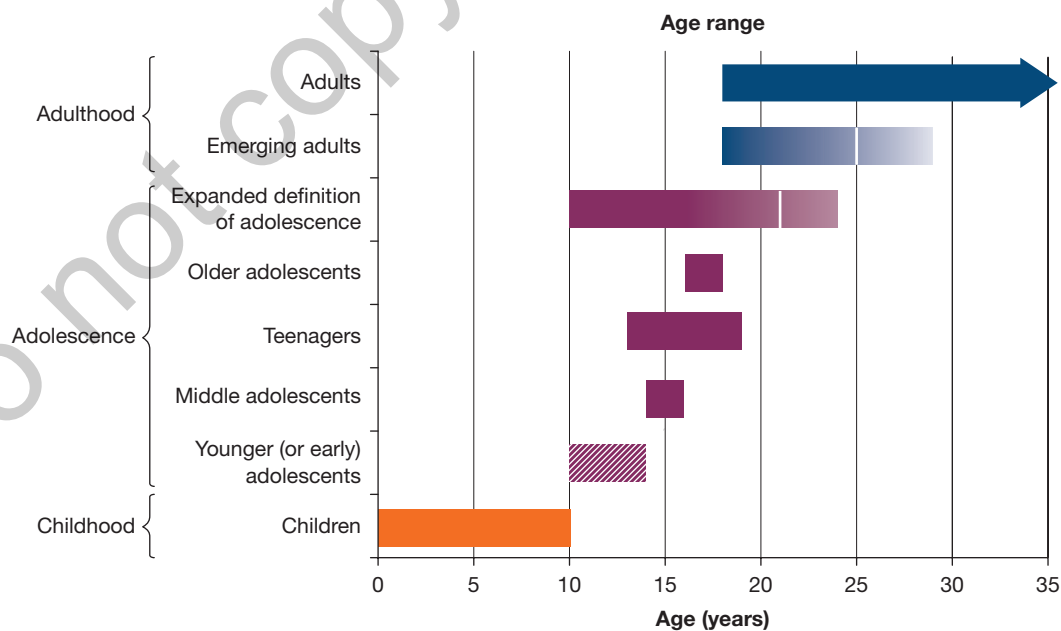
Source: Sawyer et al. (2018).

vary in the timing of their biological transitions and their social transitions and behaviors. For example, one 14-year-old may be an eighth grader in middle school and another might be enrolled in high school. Academic and social expectations and opportunities vary dramatically from middle to high school, with high school students typically experiencing more stringent academic expectations as well as more social opportunities to engage in risk behaviors. Historically, the end of adolescence was marked by the adoption of adult roles, such as marriage, which until about 50 years ago occurred typically at about age 20 for females and 22 for males (U.S. Bureau of the Census, 2017). Social changes have changed the boundaries of both adolescence and adulthood.

Emerging adulthood, ages 18 to 25, is marked by diversity in lifestyle, including friendships, residence, and more.
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Emerging Adulthood

We have seen that social changes such as the Industrial Revolution played a role in marking adolescence as a distinct period of life. In a similar way, recent social changes, such as the dramatic increase in college attendance and later onset of marriage and parenthood, have prolonged the transition to adulthood, creating a new period in life known as emerging adulthood (Arnett, 2015). Emerging adulthood begins upon leaving secondary school, at about age 18, ends at about age 25 (or as late as 29) when most young people begin to live independently and adopt adult roles such as worker, spouse, and parent. In the interim, young people in emerging adulthood occupy an "in-between" status in which they are no longer adolescents but have not yet assumed the roles that comprise adulthood.

Emerging adulthood is marked by instability and diversity in lifestyles (Arnett, Žukauskienė, & Sugimura, 2014). People aged 18 to 25 have the highest rates of residential change of any age group, shifting among residences and living situations, such as from living with parents to roommates to romantic partners. Changes in romantic relationships are also frequent. As we will discuss in Chapter 4, emerging adulthood is an important time for **identity development**, coming to a sense of self. Perhaps most strikingly, emerging adults tend to report a sense of being in between, neither adolescents nor adults. As young people make progress toward resolving their identity, they are more likely to perceive themselves as adults (Schwartz, Zamboanga, Luyckx, Meca, & Ritchie, 2013). Finally, although emerging adults experience many transitions, instability, and mixed emotions, most have a sense of optimism. For example, in one study of more than a thousand 18- to 29-year-olds in the United States, 89% agreed with the statement, "I am confident that eventually I will get what I want out of life," and over 75% agreed with the statement, "I believe that, overall, my life will be better than my parents' lives have been" (Arnett & Schwab, 2012).

How young people traverse this stage, and how long it takes, is a result of the interaction of the individual's capacities and the environment in which he or she lives—family, social, economic, and community resources (Wood et al., 2018). Transitions do not occur at the same pace or in the same order for everyone. Emerging adults adopt adult roles at different times. Young people vary with regard to when they enter careers, when they marry, and when they become parents (Eisenberg, Spry, & Patton, 2015). Most research on emerging adulthood has sampled college students, potentially yielding a narrow view of this period in life (Hendry & Kloep, 2010; Mitchell & Syed, 2015). College enrollment often delays residential and financial independence, as most college students tend to depend on their parents for financial and often residential support. In contrast to college students, young people who are employed are more likely to be financially self-supporting and to live in a residence independent of their parents, markers of adulthood. Young people who drop out of high school, experience early parenthood, begin working at a job immediately after high school, or live in low socioeconomic status homes and communities may experience only a limited period of emerging adulthood or may not experience emerging adulthood at all (du Bois-Reymond, 2015; Maggs, Jager, Patrick, & Schulenberg, 2012). Thus, emerging adulthood may be interwoven with socioeconomic status (du Bois-Reymond, 2015).

Emerging adulthood may be extended into the late 20s for young people who obtain advanced training,

such as attending medical school or law school, which delays entry into a career, other adult roles, and financial independence. Some theorists therefore argue that emerging adulthood is not a life stage—it does not exist everywhere and for everyone—but is simply an indicator of medium to high socioeconomic status and the educational and career opportunities that accompany such status (Côté, 2014; Syed, 2015). Given that ethnicity is often interwoven with socioeconomic status, people of color may be less likely to experience emerging adulthood (du Bois-Reymond, 2015; Syed & Mitchell, 2014).

Although emerging adulthood is not universal, it has been observed among young people in many cultures, including many countries in North and South America, Northern and Eastern Europe, Israel, China, and Japan (Arnett & Padilla-Walker, 2015; Arnett et al., 2014; Nelson, 2009; Sirsch, Dreher, Mayr, & Willinger, 2009; Swanson, 2016). However, the theory of emerging adulthood is based on samples of youth from Western countries, especially the United States. For example, one recent analysis found that three-quarters of research on emerging adulthood published between 2013 and 2015 examined U.S. samples (Ravert, Stoddard, & Donnellan, 2018). Findings obtained with Western samples cannot necessarily be generalized to people in other parts of the world. In fact, most published research examines people from the English-speaking world and Western Europe, with little representation from Latin America, Asia, Africa, or the Middle East. Henrich, Heine, and Norenzayan (2010) refer to the majority of research samples published in international journals as "Western, Educated, Industrialized, Rich, and Democratic" or WEIRD. Worldwide, few people are categorized as WEIRD, yet findings from WEIRD samples are treated as applicable to the rest of the world.

The majority of studies of emerging adulthood are conducted in Western nations without attention to whether the features that mark emerging adulthood generalize to non-Western contexts. In non-Western cultures, entry to adulthood is often marked by rituals and is similar for everyone. For example, isolated hunter-gatherer communities tend to have scripted roles, responsibilities, and trajectories. Young people in these communities likely do not take time to decide what to do with their lives, engage in social experimentation, and find themselves (Schwartz, 2016). Instead, they adopt the roles ascribed to them and aid their communities. Emerging adulthood likely does not exist in these communities.

Developmental Processes of Adolescence

The developmental changes that we experience throughout life are *multidimensional* and include changes in physical, cognitive, and socioemotional development (Baltes, Lindenberger, & Staudinger, 2006). **Physical development** refers to body maturation and growth. Physical development in adolescence is driven by puberty, the attainment of reproductive maturity, and includes changes in body size and shape, including the growth of breasts in girls and facial hair in boys.

Cognitive development refers to the maturation of thought processes and the tools that we use to obtain knowledge, become aware of the world around us, and solve problems. Adolescents become faster, more efficient, and more sophisticated thinkers than children. Most notably, adolescents develop the ability to think abstractly. They become able to solve hypothetical problems, often in similar ways as adults.

Socioemotional development includes changes in emotions, views of oneself, interactions with others and understanding of relationships, and social competence. They become driven to understand themselves and find their place in the world. **Emotion regulation**, the ability to control emotions, improves throughout adolescence. Adolescents also get better at taking other people's perspectives, improving relationships with others.

These domains of development interact in complex ways to influence adolescent functioning. For example, brain maturation, a physical development, underlies advances in abstract reasoning, a cognitive development, which might enable adolescents to become better at understanding their best friend's point of view (Braams & Crone, 2017). In turn, they might become more empathetic and sensitive to their friends' needs and develop more mature friendships, influencing their socioemotional development.

Developmental Tasks of Adolescence

Adolescents' physical, cognitive, and socioemotional development influences their progression on several interacting developmental tasks unique to the adolescent period. We are faced with developmental tasks throughout our lives, each specific to particular ages (Havighurst, 1972). Our progression on each task is influenced by physical, cognitive, and socioemotional development and the social resources and supports available to us.

Identity

Often depicted in movies and other media, the task of **identity** refers to forming a sense of self. Advances in cognition permit adolescents to think about themselves, their families, and their peers in more sophisticated ways. Adolescents begin to recognize their uniqueness and for the first time in life wonder,

"Who am I?" Identity development entails developing a sense of individuality in multiple realms, such as gender, physical attributes, sexuality, and career, while retaining a sense of connection to others. Social interactions with parents and peers help adolescents determine their sense of identity.

Autonomy

Generally speaking, **autonomy** refers to self-governance or independence. The developmental task for adolescents is to become capable of governing their emotions, values, and behavior. As adolescents develop emotional autonomy, they become more self-reliant and less emotionally dependent on their parents while retaining emotional closeness with them. Cognitive autonomy develops as adolescents adjust to their emerging cognitive skills and apply them to reason about the social world. Adolescents develop a multifaceted understanding of moral behavior and an internalized sense of right and wrong—a personal value system. A third component of autonomy, behavioral autonomy, refers to the ability to control impulses, resist pressure from others, and make and carry out decisions. Autonomy is related to identity, as adolescents with a more developed sense of self may be more prepared to demonstrate autonomy. In turn, the capacity for self-governance may facilitate identity development.

Intimacy

Adolescents' abilities to understand other people's perspectives influence their interactions and relationships. Cognitive and socioemotional development are critical contributors to developing a sense of **intimacy**, the ability to form and sustain close relationships. The task for adolescence is to develop the capacity for close, genuine relationships characterized by honesty, trust, and mutual respect. Intimacy is linked with emotional autonomy, as adolescents who are emotionally independent from their parents yet retain a connection to them are better prepared to establish intimate relationships with peers and romantic partners. Likewise, a sense of identity may contribute to intimacy because adolescents who understand themselves may be better able to focus on others' needs and make intimate connections.

Sexuality

With puberty, adolescents' bodies transform, often quickly. Adolescents must become comfortable with their bodies and the reactions of others. Developing a positive body image and comfort with one's body influences **sexuality**, the understanding and expression of sexual feelings and behaviors. Adolescents must become aware of and manage sexual feelings and engage in healthy sexual behaviors. Sexuality is linked with identity, as adolescents' grasp of their sexual identity may help them interpret their sexual feelings and behavior. Intimacy is also relevant to sexuality, as it is through close relationships that adolescents may experiment and come to understand their sexuality. Autonomy also influences sexuality, as self-reliance, personal values, and behavioral control contribute to adolescents' sexual behavior.

Contexts of Adolescence

All adolescents experience biological, cognitive, and socioemotional changes. However, the meaning ascribed to these changes, and their effects on adolescents' behavior and relationships, varies. The physical changes of puberty are accompanied by excitement in some adolescents and heightened self-consciousness in others. The advances in abstract thinking and hypothetical reasoning enable some adolescents to excel in school. Others may engage in intense introspection that can influence depression. With advances in socioemotional development, adolescents are driven to understand themselves. Some adolescents learn about themselves by exploring new activities and hobbies, others read philosophy and consider different values, and others engage in risk-taking activities such as antisocial activities and substance use. Why are these universal physical, cognitive, and socioemotional changes experienced so differently?

Development is shaped by the environments in which we live. All adolescents undergo the same physical, cognitive, and socioemotional transitions, but the effects of these changes are influenced by their unique physical and social worlds. More specifically, adolescent development is influenced by its **context**. Most simply, context refers to where and when a person develops. Context encompasses many aspects of the physical and social environment, such as family, neighborhood, country, and historical time period. It includes intangible factors, characteristics that are not visible to the naked eye, such as values, customs, ideals, and culture. In order to understand a given individual's development, we must look to his or her context. Adolescents are immersed in several contexts.

Home context. The home context includes family; interactions with parents, siblings, and other household members; and family demographics, such as ethnicity, race, socioeconomic status, and composition (single parent, divorced, two parents, same-sex parents).

School context. The school context includes interactions with teachers, coaches, administrators, and classmates. The school's location, size, resources, and quality influence adolescents' development.

The school context includes classmates, teachers, classrooms, and school resources.
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Peer context. The peer context includes friendships, social relationships, and romantic relationships. Peer groups differ in interests, activities, and orientation toward academics, risk-taking, and peer culture.

Neighborhood context. The neighborhood context includes its location, demographics, socioeconomic status, resources, and opportunities and challenges.

Online context. Historically speaking, the online context is new, having emerged over the past 2 decades. It includes interactions with people, activities and games played alone or with others, and access to resources and information.

Cultural context. The cultural context refers to the culture in which we are immersed and includes culturally relevant values, ideals, and beliefs.

Adolescents interact with others online, through social media and gaming, making the online context an important influence on development.
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Sociohistorical context. The sociohistorical context refers to the unique influence of societal and historical forces that shape development, such as politics, wars, epidemics, natural disasters, economic booms, and recessions.

Contexts interact dynamically. For example, the peer and school contexts often overlap as peer relationships influence interactions at school. Adolescents are not only influenced by their contexts, but they influence their contexts. Adolescents interact with family members and peers, thereby influencing the home and peer contexts and, in turn, influencing their own development.

REVIEW 1.2

1. What are markers of the three phases of adolescence?

2. What characteristics comprise emerging adulthood?

3. Provide examples of the three types of developmental processes of adolescence.

4. What are the major developmental tasks of adolescence?

5. Identify the contexts in which adolescents are embedded.

THINKING IN CONTEXT 1.2

1. How do you define the boundaries of adolescence? What indicators of its beginning and end are important to you? Why?

2. What are some of the contextual factors that might influence the experience of emerging adulthood? Do you think that young people from high and low socioeconomic backgrounds experience emerging adulthood in similar ways? Why or why not?

3. Do gender, race, and ethnicity influence the experience of emerging adulthood? Why or why not?

APPLY 1.2

Micah, a college student, is confused. He lives away from home, on campus, and is experiencing more

freedom than ever. He can stay up all night, go out whenever he wants, and decide whether or not to go to class. Sometimes Micah feels all grown up, but other times he feels like a kid, such as when he has to ask his parents to replenish his meal card and put some cash in his account. Micah still hasn't chosen a career path or even a major.

How would you characterize Micah's development? Consider his progress in the domains and tasks of development. What phase of adolescence do you think Micah is experiencing, if any? Why?

THEORIES OF ADOLESCENT DEVELOPMENT

Why do adolescents behave as they do? The study of adolescence is part of a larger field of study known as **developmental science**, the scientific study of lifespan development. Over the past century, scientists have learned much about lifespan development, how individuals grow from infants, to children, to adolescents, and to adults, as well as how they change throughout adulthood. Developmental scientists explain their observations by constructing theories of human development. A **theory** is a way of organizing a set of observations or facts into a comprehensive explanation of how something works. Theories are important tools for compiling and interpreting the growing body of research in human development as well as determining gaps in our knowledge and making predictions about what is not yet known. Most theories about adolescent development are embedded within developmental theories that encompass the entire lifespan, as discussed in the following sections.

Psychoanalytic Theories

Are there powerful forces within us that make us behave as we do? Are we pushed by inner drives? **Psychoanalytic theories** describe development and behavior as a result of the interplay of inner drives, memories, and conflicts we are unaware of and cannot control. These inner forces influence our behavior throughout our lives. Freud and Erikson are two key psychoanalytic theorists whose theories remain influential today.

Freud's Psychosexual Theory

Sigmund Freud (1856–1939), a Viennese physician, is credited as the father of the psychoanalytic perspective. Freud believed that much of our behavior is driven by unconscious impulses that are outside of our awareness. Freud believed we progress through a series of *psychosexual stages*, periods in which unconscious drives are focused on different parts of

the body, making stimulation to those parts a source of pleasure. Freud explained that the task for parents is to strike a balance between overgratifying and undergratifying a child's desires at each stage in order to help the child develop a healthy personality with the capacity for mature relationships throughout life. During adolescence, Freud posed that young people enter the genital stage and basic unconscious drives focus on the genitals. Adolescents become concerned with sexuality and developing mature and satisfying sexual relationships. Note that the genital stage is the final stage in Freud's scheme, suggesting that he viewed adolescents as similar to adults.

Notably, Freud's theory grew from his work with female psychotherapy patients; he did not study children (Crain, 2016). In part because of its heavy emphasis on childhood sexuality, Freud's psychosexual stage framework is not widely accepted (Westen, 1998). Yet some of Freud's ideas have stood up well to the test of time and have permeated popular culture, such as the notion of unconscious processes of which we are unaware, the importance of early family experience, and the role of emotions in development (Bargh, 2013). Another reason why Freud's theory tends to be unpopular with developmental scientists is that it cannot be directly tested and is therefore not supported by research (Miller, 2016). How are we to study unconscious drives, for instance, when we are not aware of them?

Erikson's Psychosocial Theory of Development

Erik Erikson (1902–1994) was influenced by Freud, but he placed less emphasis on unconscious motivators of development and instead focused on the role of the social world, society, and culture. Erikson posed a lifespan theory of development in which individuals progress through eight *psychosocial stages* that include changes in how they understand and interact with others, as well as changes in how they understand themselves and their roles as members of society (Erikson, 1950). Each age presents a unique developmental task, which Erikson referred to as a crisis or conflict that must be resolved. How well individuals address the crisis determines their ability to deal with the demands made by the next stage of development.

Erikson posited that adolescents face the crisis of identity verses role confusion, a time in which they must come to a sense of self by exploring various possibilities and committing to those that fit. Identity verses role confusion is perhaps the most well-known stage in Erikson's scheme and although his theory is criticized as difficult to test, a great deal of research has examined identity development in adolescence and emerging adulthood. We will examine Erikson's ideas about identity in Chapter 4. Erikson's

psychosocial theory is one of the first theories of adolescent development and of lifespan development (Crain, 2016).

Behaviorist and Social Learning Theories

Behavior and development are influenced by the physical and social environment. Theorists who study **behaviorism** examine environmental influences on behavior—specifically, only those that can be observed (rather than unobservable unconscious impulses, for example). Operant conditioning is an example of a behaviorist theory.

Operant Conditioning

Perhaps it is human nature to notice that the consequences of our behavior influence our future behavior. A teenager who arrives home after curfew and is greeted with a severe scolding may be less likely to return home late in the future. A teacher who distributes cupcakes to students in an early morning class and notices that students arrive to class on time and in good spirits may be more likely to bring cupcakes in the future. These two examples illustrate the basic tenet of B. F. Skinner's (1905–1990) theory of **operant conditioning**, which holds that behavior becomes more or less probable depending on its consequences. According to Skinner, a behavior followed by a rewarding or pleasant outcome, called **reinforcement**, will be more likely to recur, but one followed by an aversive or unpleasant outcome, called **punishment**, will be less likely to recur.

All people and animals—even insects—can learn though operant conditioning. Although reinforcement and punishment can explain and influence adolescent behavior, behaviorism does not offer a theory of adolescent development itself. Moreover, developmental scientists tend to disagree with operant conditioning's emphasis on external events (reinforcing and punishing consequences) over internal events (thoughts and emotions) as influences on behavior (Crain, 2016). That is, controlling an adolescent's environment can influence his or her development, but change can also arise from an adolescent's own thoughts and actions, as described by social learning theory.

Social Learning Theory

Like behaviorists, Albert Bandura (born 1925) pointed to the role of the environment, but he also advocated for the role of thought and emotion as contributors to development. According to Bandura's **social learning theory**, people actively process information—they think and they feel emotion—and their thoughts and feelings influence their behavior. Adolescents who are tempted to break curfew, for example, might anticipate their parents' worry and decide to return home on time. Our thoughts and emotions about the consequences of our behavior influence our future behavior. We do not need to experience punishment or reinforcement in order to change our behavior (Bandura, 2012). We can learn by thinking about the potential consequences of our actions. One of Bandura's most enduring ideas about development is that people learn through observing and imitating others, which he referred to as **observational learning** (Bandura, 2010). This finding suggests that people learn by observing the consequences of others' actions. Our observations influence our beliefs about a given behavior. Observational learning is one of the most powerful ways in which we learn.

FIGURE 1.3

Bandura's Model of Reciprocal Determinism
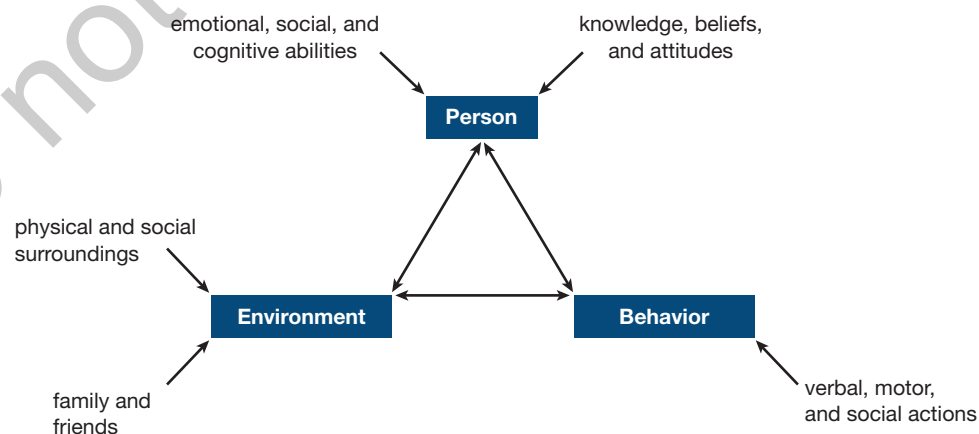
Bandura did not theorize specifically about adolescent development; however, his ideas, especially the concept of reciprocal determinism, have implications for understanding adolescent development. **Reciprocal determinism** refers to the concept that individuals and the environment interact and influence each other over time (Bandura, 2011). Specifically, development is a result of interactions between the individual's characteristics, his or her behavior, and the physical and social environment (see Figure 1.3).

As an example, consider how adolescents' characteristics might influence their behavior and the surrounding social environment. Suppose Isaac is naturally quick to debate with others. This behavior stimulates those around him to engage in debate. Isaac's behavior (e.g., being quick to debate) is influenced by his personal characteristics (e.g., being bright and talkative). Isaac's behavior is also influenced by the environment (e.g., being surrounded by smart people who enjoy debating) and his behavior influences the environment (e.g., people who enjoy debating are more likely to talk to Isaac, while people who avoid debating are less likely to talk to him). This is an example of the complex interplay among the person, behavior, and physical and social environment that underlies much of what we will discuss throughout this book.

Cognitive Theories

Cognitive theorists view cognition, thought, as essential to understanding people's functioning throughout life. In this section, we look at some of the ideas offered by cognitive-developmental theory and information processing theory.

Piaget's Cognitive-Developmental Theory

Swiss scholar Jean Piaget (1896–1980) was the first scientist to systematically examine infants' and children's thinking. Piaget's **cognitive-developmental perspective** on child development views individuals as active explorers of their world, driven to learn by interacting with the world around them and organizing what they learn into **cognitive schemas**, or concepts, ideas, and ways of interacting with the world. Through these interactions, they construct and refine their own cognitive schemas, thereby contributing to their own cognitive development. Piaget proposed that children's drive to explore and understand the world—to construct more sophisticated cognitive schemas—propels them through four stages of cognitive development, from infancy through adolescence. Throughout much of childhood, we are incapable of logic. Piaget posed that logic emerges in late childhood but it is simplistic, referring only to clear concrete examples.

It is not until adolescence that we reach the pinnacle of development—**formal operational reasoning**, or abstract thought. Adolescents become capable of abstract reasoning, can devise hypotheses about real and imagined phenomena, and can apply the scientific method to solve problems. Now adolescents can understand that a statement can be interpreted in more than one way—that a comment such as "great" can be interpreted positively and also as a sarcastic retort, for example. The ability to consider multiple perspectives influences adolescents' relationships because they can imagine and act on other peoples' feelings. We will consider Piaget's ideas about adolescent development in Chapter 3.

Piaget's cognitive-developmental theory transformed the field of developmental psychology and remains one of the most widely cited developmental theories. It was the first to consider *how* children and adolescents think and to view people as active contributors to their development. In addition, Piaget's concept of cognitive stages and the suggestion that individuals' reasoning is limited by their stage has implications for education—specifically, the idea that effective instruction must match children and adolescents' developmental level. Critics of cognitive-developmental theory argue that Piaget focused too heavily on cognition and ignored emotional and social factors in development (Crain, 2016). Others believe that Piaget neglected the influence of contextual factors by assuming that cognitive-developmental stages are universal—that all individuals everywhere progress through the stages in a sequence that does not vary. Other theorists, like Vygotsky, discussed next, emphasize the role of context in cognitive development.

Vygotsky's Sociocultural Theory

We are immersed in a culture that influences how we think and approach the world. Russian scholar Lev Vygotsky (1896–1934) emphasized the importance of **culture** in development. Culture refers to the beliefs, values, customs, and skills of a group; it is a product of people's interactions in everyday settings (Markus & Kitayama, 2010). Vygotsky's **sociocultural theory** examines how culture is transmitted from one generation to the next through social interaction (Vygotsky, 1978). This process begins in infancy but continues throughout childhood, adolescence, and beyond. Children and adolescents interact with adults and more experienced peers as they talk, play, and work alongside them. It is through these formal and informal social contacts that individuals learn about their culture and what it means to belong to it. By participating in cooperative dialogues and receiving guidance from adults and more expert peers, children and adolescents adopt their culture's perspectives and practices, learning to think and behave as members

Lev Vygotsky (1896–1934) emphasized the importance of culture and social interaction in development.
SPUTNIK / Alamy Stock Photo

of their group (Rogoff, 2016). Over time, they become able to apply these ways of thinking to guide their own actions, thus requiring less assistance from adults and peers (Rogoff, Moore, Correa-Chavez, & Dexter, 2014).

Like Piaget, Vygotsky emphasized that children and adolescents actively participate in their development by engaging with the world around them. However, Vygotsky also viewed development as a social process that relies on interactions with adults, more mature peers, and other members of their culture. Vygotsky's sociocultural theory is an important addition to the field of human development because it is the first theory to emphasize the role of the cultural context in influencing people's development throughout life. Critics of sociocultural theory argue that it overemphasizes the role of context, minimizes the role of individuals in their own development, and neglects the influence of genetic and biological factors (Crain, 2016). Some cognitive theorists focus on the process of thinking itself, positing that cognitive development is a continuous process of growth and skill development (Birney & Sternberg, 2011), as described in the following section.

Information Processing Theory

A popular way of considering cognition emphasizes that the mind works in ways similar to a computer, in that information enters and then is manipulated, stored, recalled, and used to solve problems (Halford & Andrews, 2011). Unlike the theories we have discussed thus far, **information processing theory** is not one theory that is attributed to an individual theorist.

Instead, there are many information processing theories and each emphasizes a different aspect of thinking (Callaghan & Corbit, 2015; Müller, Kerns, Müller, & Kerns, 2015; Ristic & Enns, 2015). Some theories focus on how people perceive, focus on, and take in information. Others examine how people store memories and retrieve them. Still others examine problem-solving—how people approach and solve problems in academic settings and in everyday life.

According to information processing theorists, our mental processes of noticing, taking in, manipulating, storing, and retrieving information do not show the radical changes associated with stage theories. Instead, we are born with these abilities and development largely entails changes in the efficiency and speed with which we think (Luna, Marek, Larsen, Tervo-Clemmens, & Chahal, 2015). Information processing theory examines cognition throughout the lifespan, not simply in adolescence, because cognition changes throughout life occur alongside changes in brain functioning, experience, and social interactions. Information processing abilities mature over adolescence, enabling young people to consider and solve complex problems in their everyday world. Neurological development plays a critical role in the development of information processing abilities in adolescence.

Information processing theory offers a detailed explanation of thinking that permits scientists to make and test specific predictions about behavior and performance. Indeed, information processing theory has generated a great many research studies and has garnered much empirical support (Halford & Andrews, 2011). Critics of the information processing perspective argue that a computer model cannot capture the complexity of the human mind and people's unique cognitive abilities. In addition, findings from laboratory research may not extend to everyday contexts in which adolescents must adapt to changing circumstances and challenges to attention (Miller, 2016).

Contextual Theories

As we have discussed, adolescents are immersed in a variety of interacting social contexts that influence their development, such as family, peer group, school, neighborhood, and culture. Contextual theories emphasize the role of the sociocultural context in development. Specifically, Urie Bronfenbrenner proposed that the individual-in-context is the smallest unit of study because development occurs through social interaction and can only be understood as a function of interactions within multiple settings.

Bronfenbrenner's Bioecological Systems Theory

Similar to Vygotsky's sociocultural theory, Urie Bronfenbrenner (1917–2005) emphasized the interplay

between the individual and context in development. Specifically, Bronfenbrenner's **bioecological systems theory** poses that development is a result of the ongoing interactions among biological, cognitive, and socioemotional changes within the person and his or her changing context, including home, school, neighborhood, culture, and society, as shown in Figure 1.4 (Bronfenbrenner & Morris, 2006). The bioecological systems theory offers a comprehensive perspective on the role of context as an influence on development. As shown in Figure 1.4, contexts are organized into a series of systems in which individuals are embedded and that interact with one another and the person to influence development.
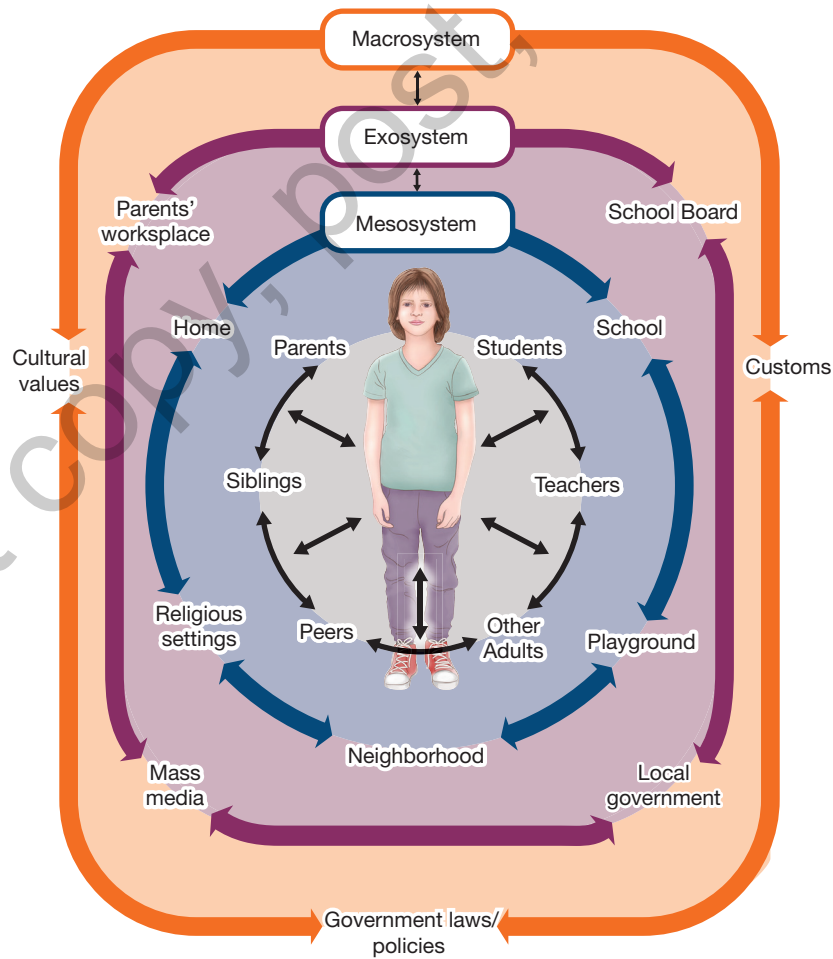
Ontogenetic development refers to the changes that take place in the individual, the center of the bioecological model. Ontogenetic development comprises the developing adolescent's interacting biological, cognitive, and socioemotional traits.

Genetic, psychological, emotional, and personality traits interact, for example, influencing each other. Physical development, such as brain maturation, may influence cognitive development, such as the ability to consider other people's perspectives, which in turn may influence social development, the ability to have more complex and intimate friendships. In turn, social development may influence cognitive development, as adolescents learn from each other. In this way, the various forms of development interact. Ontogenetic development is influenced by, but also influences, the many contexts in which we are embedded (Bronfenbrenner & Morris, 2006).

Perhaps the most visible context is the **microsystem**, the innermost level of the bioecological system, which includes interactions with the immediate physical and social environment surrounding the person, such as family, peers, and school. Because the microsystem contains the developing person, it has

an immediate and direct influence on his or her development. For example, peer relationships can influence an adolescent's sense of self-esteem, social skills, and emotional development.

Microsystems naturally interact. For example, experiences in the home influence those at school, or peer interactions occur across multiple settings, such as home, school, and neighborhood. These interactions comprise the **mesosystem**, which refers to the relations among microsystems or connections among contexts. Like the microsystem, the mesosystem has a direct influence on the individual because he or she is a participant in it.

The **exosystem** consists of settings in which the individual is not a participant but that nevertheless influence him or her. For example, the availability of funding for schools indirectly affects adolescents by influencing the availability of classroom resources. Funding for after-school community centers, exposure to public service announcements (such as anti-drug messages), and the availability of part-time employment are all exosystem factors that influence adolescents. The exosystem is an important contribution to our understanding of development because it shows us how the effects of outside factors trickle down and indirectly affect individuals.

The **macrosystem** is the greater sociocultural context in which the microsystem, mesosystem, and exosystem are embedded. It includes cultural values of the society at large. The macrosystem indirectly influences the individual because it affects each of the other contextual levels. For example, cultural beliefs about the value of education (macrosystem) influence funding decisions made at national and local levels (exosystem), as well as what happens in the classroom and in the home (mesosystem and microsystem).

By its very nature, the bioecological model is always shifting because individuals and their contexts interact dynamically and perpetually, resulting in a constant state of change. The final element of the bioecological system is the **chronosystem**, which refers to the element of time. The bioecological system changes over time and the time in which we live influences our development. Large-scale social changes, such as those that accompany war, natural disasters, and epidemics, can influence each level of the bioecological system. For example, neighborhood resources may change over time with changes in local policies and funding. Our relationships with parents, friends, and teachers change over time.

Recently, the bioecological model has been criticized for its vague explanation of development, especially the role of culture (Vélez-Agosto, Soto-Crespo, Vizcarrondo-Oppenheimer, Vega-Molina, & García Coll, 2017). Situated in the macrosystem, culture is said to influence development through the interdependence of the systems. Yet current conceptualizations of culture view it all encompassing and occurring at all ecological levels because culture refers to the processes used by people as they make meaning or think through interactions with group members (Mistry et al., 2016; Yoshikawa, Mistry, & Wang, 2016). Critics therefore argue that since culture is manifested in our daily activities, it is inherent in each bioecological level (Vélez-Agosto et al., 2017). A second criticism arises from the sheer complexity of the bioecological model and its attention to patterns and dynamic interactions. We can never measure and account for all of the potential individual and contextual influences on development at once, making it difficult to devise research studies to test the validity of the model. Proponents, however, argue that it is not necessary to test all of the model's components at once. Instead, smaller studies can examine each component over time (Jaeger, 2016; Tudge et al., 2016). The bioecological model can be a source of hypotheses that can be tested through scientific research.

REVIEW 1.3

1. What are the major developments during adolescence according to Freud and Erikson?

2. How do behaviorists account for adolescent development and behavior?

3. What is social learning and how might it help us understand adolescents?

4. Contrast Piagetian and information processing approaches to cognitive development.

5. What is Vygotsky's sociocultural theory?

6. Identify the six parts of Bronfenbrenner's bioecological model.

THINKING IN CONTEXT 1.3

Apply Bronfenbrenner's bioecological model to your context.

1. Describe your microsystem and mesosystem. Identify at least three examples of each.

2. What are some ways in which your exosystem has influenced your development?

3. Finally, identify at least two examples that illustrate the effect of the macrosystem on your development.

APPLY 1.3

Twelve-year-old Crystal sits in the store manager's office after being caught shoplifting. Given Crystal's age and her

show of remorse, the store manager decides to contact Crystal's mother rather than press charges. Crystal's mother is shocked to hear of her daughter's activities.

Apply developmental theories to explain Crystal's behavior and suggest ways of helping Crystal. Specifically, describe four theories that might account for Crystal's shoplifting behavior and how each might be applied to help Crystal.

. . . .

THE SCIENCE OF ADOLESCENT DEVELOPMENT

Theories are the result of scientists' attempts to organize observations. Developmental scientists who study adolescents conduct research to gather information and answer questions about how they grow and change over time. They devise theories to organize research findings and conduct new studies whose findings are applied to modify theories. By conducting multiple studies over time, developmental scientists refine their theories about human development.

Methods of Collecting Data

The basic challenge that scientists face in conducting research is determining what information is important and how to gather it. Scientists use the term **data** to refer to the information they collect. How can we gather data about adolescents? Should we simply talk with them, watch them as they progress through their days, or hook them up to machines that measure physiological activity such as heart rate or brain waves? Developmental scientists use a variety of different measures to collect information.

Observational Measures

Researchers who use observational measures collect information by watching and monitoring adolescents' behavior. Researchers who use **naturalistic observation** observe and record behavior in natural, real-world settings. For example, in one study, researchers examined peer interaction patterns over the transition to adolescence by observing 9- to 12-year-old children in the schoolyard during recess and lunch (Coplan, Ooi, & Nocita, 2015). They recorded the early adolescents' activity and interaction with peers and found that those who were consistently unengaged with peers tended to show high levels of problems such as anxiety, depression, and loneliness, as reported by both the adolescents and their mothers.

A challenge of using naturalistic observation is that sometimes the presence of an observer causes those being observed to behave unnaturally. This is known as *participant reactivity*. One way of reducing the effect of participant reactivity is to conduct multiple observations so that the participants get used to the observer and return to their normal behavior. Another promising method of minimizing participant reactivity is to use an *electronically activated voice recorder* (EAR) (Mehl, 2017). Participants carry the EAR as they go about their daily life. The EAR captures segments of audio information over time: hours, days, or even weeks. It yields a log of people's activities as they naturally unfold. The EAR minimizes participant reactivity because the participant is unaware of exactly when the EAR is recording. For example, in one study, adolescents with asthma carried the EAR for a 4-day period and reported on their experience of parent-adolescent conflict and asthma symptoms (Tobin et al., 2015). This study found that daily conflict (recorded by the EAR) predicted adolescents' self-reported asthma symptoms, suggesting that family relationships can influence health.

Naturalistic observation permits researchers to observe patterns of behavior in everyday settings. However, sometimes a participant may seldom show the behavior under study, requiring a researcher to observe for very long periods of time to obtain data. For this reason, many researchers make **structured observations**, in a controlled environment, a situation constructed by the experimenter. For example, adolescents might be observed in a laboratory setting as they complete a puzzle-solving task or interact with peers they have just met. The laboratory environment permits researchers to exert more control over the situation than is possible in natural settings, making it more likely that they will observe the behavior of interest. One challenge to conducting structured observations is that people do not always behave in laboratory settings as they do in real life.

Self-Report Measures

Interviews and questionnaires are known as self-report measures because the person under study answers questions to "report" about his or her experiences, beliefs, and behavior. Interviews can take place in person, over the phone, or over the Internet.

In an **open-ended interview**, a trained interviewer uses a conversational style that encourages the adolescent to expand his or her responses. The scientist begins with a question and then follows up with additional questions to obtain a better understanding of the adolescent's response. However, when questions are phrased differently for each person, responses may not capture real differences in how adolescents think about a given topic and instead may reflect differences in how the questions were posed and followed up by the interviewer. In contrast, a **structured interview** poses the same set of questions

Interviews are commonly used to gather data from adolescents.
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to each participant in the same way. Because all adolescents receive the same set of questions, differences in responses are more likely to reflect true differences among adolescents and not merely differences in the manner of interviewing.

Questionnaires, also called surveys, are composed of sets of questions, typically multiple choice, and can be administered in person, online, or by telephone, e-mail, or postal mail. Questionnaires are popular data collection methods because they enable scientists to collect information from many people quickly and inexpensively. Questionnaires are also popular because they can easily be administered anonymously, protecting participants' privacy. For example, the Monitoring the Future Study is an annual survey of 50,000 eighth-, tenth-, and twelfth-grade students that collects information about their behaviors, attitudes, and values concerning drug and alcohol use (Miech et al., 2017). The survey permits scientists to gather an enormous amount of data, yet its anonymity protects the adolescents from the consequences of sharing personal information that they might not otherwise reveal.

A challenge of self-report measures is that sometimes people give socially desirable answers: They respond in ways they would like themselves to be perceived or believe researchers desire. A middle school student completing a survey about cheating, for example, might respond that she never cheats, despite sometimes looking at nearby students' papers during examinations. The student's answers might instead match the person she aspires to be or the behaviors she believes the world values—that is, someone who does not cheat on exams. Self-report data may not always reflect people's true attitudes and behavior.

Physiological Measures

Our bodies are an important source of information that can be used to understand psychological phenomena. Physiological measures offer important information increasingly used in developmental research because cognition, emotion, and behavior have physiological indicators. For example, do you feel your heart beat more rapidly or your palms grow sweaty when you give a class presentation? Increases in heart rate and perspiration are physiological measures of anxiety. Other researchers might measure cortisol, a hormone triggered by the experience of stress (Simons, Cillessen, & de Weerth, 2017).

Eye movements and pupil dilation can indicate attention and interest. For example, researchers who tracked participants' eye movements as they viewed Facebook feeds learned that people are naturally attracted to social media and news posts that are rich with pictures and links, yet most people are unable to report what they have viewed, even immediately after viewing it (Vraga, Bode, & Troller-Renfree, 2016). A researcher might measure pupil dilation as an indicator of physiological arousal (Feurer, Burkhouse, Siegle, & Gibb, 2017). Physiological measures do not rely on verbal reports and they generally cannot be faked. However, physiological responses may be difficult to interpret. For example, excitement and anger may both cause an increase in heart rate.

Physiological measures of brain activity are a particularly promising source of data. Several tools are used to study the brain. **Electroencephalography (EEG)** measures electrical activity patterns produced by the brain via electrodes placed on the scalp. Researchers study fluctuations in activity that occur when participants are presented with stimuli or when they sleep. EEG recordings measure electrical activity in the brain, but they do not provide information about the location of activity or the brain structures that are the source of brain activity.

Computerized tomography (CT) compiles multiple X-ray images to create a three-dimensional picture of a person's brain, providing images of brain structures, bone, brain vasculature, and tissue (Cierniak, 2011). CT scans can provide researchers with information about the density of brain structures to illustrate, for example, how the thickness of the cortex changes with development.

Positron emission tomography (PET) involves injecting a small dose of radioactive material into the participant's bloodstream to monitor the flow of blood

(Portnow, Vaillancourt, & Okun, 2013). Blood flows more readily to active areas of the brain and the resulting images can illustrate what parts of the brain are active as participants view stimuli and solve problems.

Functional magnetic resonance imaging (fMRI) measures brain activity with a powerful magnet that uses radio waves and to measure blood oxygen level (Bandettini, 2012). Active areas of the brain require more oxygen-rich blood; fMRI enables researchers to determine what parts of the brain are active as individuals complete cognitive tasks. fMRI images are much more detailed than PET scans and do not rely on radioactive molecules, which can only be administered a few times before becoming unsafe.

Diffusion tensor imaging (DTI) uses an MRI machine to track how water molecules move in and around the fibers connecting different parts of the brain (Soares, Marques, Alves, & Sousa, 2013). DTI gauges the thickness and density of the brain's connections, permitting researchers to measure the brain's white matter and determine changes that occur with development.

Research Designs

Just as there are many ways to collect information, scientists have many options for conducting their studies. In addition to determining the research question and deciding what information to collect, scientists must choose a research design—a technique for conducting the research study.

Case Study

A **case study** is an in-depth examination of a single individual or small group of individuals. In conducting a case study, a researcher gathers information from many sources, such as through observations, interviews, and conversations with the adolescent's family, teachers, friends, and others who know him or her. A case study may include samples or interpretations of an adolescent's writing, such as poetry or journal entries, artwork, and other creations. A case study results in a rich description of an adolescent and is useful for documenting individuals who have unique and unusual experiences, abilities, or disorders. However, conclusions drawn from a case study may not be generalized or applied to others because they are based on extensive study of a single person. Case studies can be a source of hypotheses to examine in large-scale research.

Correlational Research

Are adolescents with high self-esteem more likely to excel at school? Are college students who work part-time less likely to graduate? Both of these questions can be studied with **correlational research**, which permits researchers to examine relations among measured characteristics, behaviors, and events. For example, in one study of the relationship between physical fitness and academic performance in middle school students, the adolescents with higher aerobic capacity scored higher on achievement tests than did those with poorer aerobic capacity (Bass, Brown, Laurson, & Coleman, 2013). However, note that this correlation does not tell us *why* aerobic capacity was associated with academic achievement. Correlational research cannot answer this question because it simply describes relationships that exist among variables; it does not enable us to reach conclusions about the causes of those relationships. It is likely that other variables influence both an adolescent's aerobic ability and achievement (e.g., health), but correlation does not enable us to determine the causes for behavior—for that we need an experiment.

Experimental Research

Scientists who seek to test hypotheses about *causal* relationships, such as whether media exposure influences behavior or whether hearing particular types of music influences mood, employ **experimental research**. An experiment is a procedure that uses control to determine causal relationships among variables. Specifically, one or more variables thought to influence a behavior of interest are changed, or manipulated, while other variables are held constant. Researchers can then examine how the changing variable influences the behavior under study. If the behavior changes as the variable changes, this suggests that the variable caused the change in the behavior.

For example, Gentile, Bender, and Anderson (2017) examined the effect of playing violent video games on early adolescents' physiological stress and aggressive thoughts. Participants were randomly assigned to play a violent video game (*Superman*) or a nonviolent video game (*Finding Nemo*) for 25 minutes in the researchers' lab. The researchers measured physiological stress as indicated by heart rate and cortisol levels before and after the adolescents played the video game. The participants also completed a word completion task that the researchers used to measure the frequency of aggressive thoughts. The researchers found that adolescents who played violent video games showed higher levels of physiological stress and aggressive thoughts than did those who played nonviolent video games. They concluded that the type of video game influenced adolescents' stress reactions and aggressive thoughts.

Let's take a closer look at the components of this experiment. Conducting an experiment requires choosing at least one **dependent variable**, the behavior under study (e.g., physiological stress—heart rate and cortisol—and aggressive thoughts) and at

least one **independent variable**, factors proposed to change the behavior under study (e.g., type of video game). The independent variable is manipulated or varied systematically by the researcher during the experiment (e.g., a child plays with a violent or a nonviolent video game). The dependent variable is expected to change as a result of varying the independent variable, and how it changes is thought to depend on how the independent variable is manipulated (e.g., physiological stress and aggressive thoughts vary in response to the type of video game). After the independent variable is manipulated, if the experimental and control groups differ on the dependent variable, it is concluded that the independent variable *caused* the change in the dependent variable. That is, a cause-and-effect relationship has been demonstrated.

Developmental scientists conduct studies that use both correlational and experimental research. Studying development, however, requires that scientists pay close attention to age and how young people change over time, which requires the use of specialized research designs, as described in the following sections.

Developmental Research Designs

Do shy children become shy adolescents? Do relationships with parents in early adolescence influence romantic relationships in emerging adulthood? These questions require that developmental scientists examine relationships among variables over time. The following sections discuss the designs that researchers use to learn about human development. As you learn about each design, consider how we might employ it to answer a question about development. For example, how does alcohol use among adolescents change from sixth grade through twelfth grade?

Cross-Sectional Research Design

A **cross-sectional research study** compares groups of people of different ages at a single point in time. For example, to examine how alcohol use varies from sixth through twelfth grade, a scientist might visit a school system in 2022 and administer a survey about alcohol use to students ages 12, 14, 16, and 18. By analyzing the survey, the scientist can describe *age differences* in alcohol use and identify how 12-year-olds differ from 18-year-olds. However, the results do not tell us whether the observed age differences in alcohol use reflect age-related or developmental change. In other words, we don't know whether the 12-year-olds will show the same patterns of alcohol use as the current 18-year-olds when they are 18, 6 years from now.

Cross-sectional research permits age comparisons, but participants differ not only in age but in cohort. A **cohort** is a group of people of the same age who are exposed to similar historical events and cultural and societal influences. Cohorts refer to generations; however, we can also speak of smaller cohorts based on factors such as the year of entry to school, for example. In this example, the 12-year-olds and the 18-year-olds are different ages, but they are also in different cohorts, so the two groups may differ in reported alcohol use because of development (age-related changes) or cohort (group-related changes). For example, perhaps the 12-year-olds received a new early prevention program at school that was not available to the 18-year-olds when they were 12. The difference in alcohol use between 12-year-olds and 18-year-olds might then be related to the prevention program, a cohort factor, and not to age. Cross-sectional research is an important source of information about age differences, but it cannot provide information about age-related changes because participants are assessed only once.

Longitudinal Research Design

A **longitudinal research study** follows the same group of participants over many points in time. Returning to the previous example, to examine how alcohol use changes from 12 to 18 years of age, a developmental scientist using longitudinal research might administer a survey on alcohol use to 12-year-olds and then follow up 2 years later when they are 14, again when they are 16, and finally when they are 18. If a researcher began this study in 2022, the last round of data collection would not occur until 2028.

Longitudinal research provides information about age-related change because it follows individuals over time, enabling scientists to describe how the 12-year-olds' alcohol use changed as they progressed through adolescence. However, longitudinal research studies only one cohort, calling into question whether findings indicate developmental change or whether they are an artifact of the cohort under study. Was the group of 12-year-olds that the scientist chose to follow for 6 years somehow different from the cohorts or groups of students who came before or after? Because only one cohort is assessed, it is not possible to determine whether the observed changes are age-related changes or changes that are unique to the cohort examined.

Sequential Research Designs

A **sequential research design** combines the best features of cross-sectional and longitudinal research by assessing multiple cohorts over time, enabling scientists to make comparisons that disentangle the effects of cohort and age (see Figure 1.5). Consider the alcohol use study once more. A sequential design would begin in 2022 with a survey to students ages 12, 14, 16, and 18. Two years later, in 2024, the initial sample is surveyed again; the 12-year-olds are now

TABLE 1.1

Comparing Research Designs

DESIGN	STRENGTHS	LIMITATIONS
Research Designs		
Case study	Provides a rich description of an individual.	Conclusions may not be generalized to other individuals.
Correlational	Permits the analysis of relationships among variables as they exist in the real world.	Cannot determine cause-and-effect relations.
Experimental	Permits a determination of cause-and-effect relations.	Data collected in artificial environments may not represent behavior in real-world environments.
Developmental Research Designs		
Longitudinal	Permits the determination of age-related changes in a sample of participants assessed for a period of time.	Requires a great deal of time, resources, and expense. Participant attrition may limit conclusions. Cohort-related changes may limit the generalizability of conclusions.
Cross-sectional	More efficient and less costly than the longitudinal design. Permits the determination of age differences.	Does not permit inferences regarding age change. Confounds age and cohort.
Sequential	More efficient and less costly than the longitudinal model. Allows for both longitudinal and cross-sectional comparisons, which reveal age differences and age change, as well as cohort effects.	Time-consuming, expensive, and complicated in data collection and analysis.

Source: Sawyer et al. (2018).

FIGURE 1.5

Sequential Design

Cross-Sequential Design
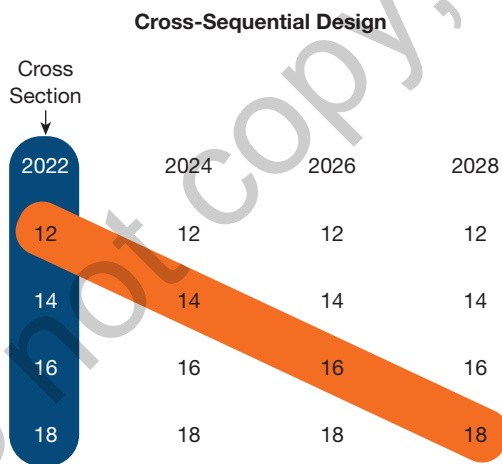
14, the 14-year-olds are now 16, and the 16-year-olds are now 18. The 18-year-olds are now 20 and are not assessed, because they have aged out of the study. Now a new group of 12-year-olds is surveyed. Two years later, in 2026, the participants are surveyed again, and so on.

The sequential design provides information about age, cohort, and age-related change. The cross-sectional data (comparisons of 12-, 14-, 16-, and 18-year-olds from a given year) provide information about age differences, how the age groups differ from one another. The longitudinal data (annual follow-up of participants ages 12 through 18) captures age-related change because participants are followed up over time. The sequential component helps scientists separate cohort effects from age-related change. Because several cohorts are examined at once, the effect of cohort can be studied. The sequential design is complex, but it permits human development researchers to disentangle the effects of age and cohort and answer questions about developmental change. See Table 1.1 for a comparison of research designs.

REVIEW 1.4

1. Compare observational, self-report, and physiological measures.

2. Differentiate among the case study method, correlational research, and experimental research.

3. Contrast cross-sectional, longitudinal, and sequential research designs.

THE PROMISE AND CHALLENGE OF APPLIED DEVELOPMENTAL SCIENCE

In its early years, the study of human development was based on laboratory research devoted to uncovering universal aspects of development by stripping away contextual influences. This basic research was designed to examine how development unfolds, with the assumption that development is a universal process with all people changing in similar ways and in similar timeframes. In the early 1980s, influenced by contextual theories (such as Bronfenbrenner's bioecological approach) and the growing assumption that people are active in their development (a cornerstone of lifespan developmental theory), developmental scientists began to examine developmental processes outside of the laboratory (Lerner, Johnson, & Buckingham, 2015b). It quickly became apparent that there are a great many individual differences in development that vary with a myriad of contextual influences. The field of **applied developmental science**

emerged, studying individuals within the contexts in which they live and applying research findings to improve people's lives.

By its very nature, research in applied developmental science is multidisciplinary because real-world problems are complex and require the expertise of scientists from many fields, such as human development, psychology, medicine, biology, anthropology, and more. Applied developmental scientists examine and contribute to policies on a wide range of issues that affect individuals and families, such as health and health care delivery, violence, and school failure. For example, they might study contextual influences such as the impact of environmental contaminants, poor access to clean water, or exposure to poverty on physical, cognitive, and socioemotional development (Aizer, 2017; Gauvain, 2018; Golinkoff, Hirsh-Pasek, Grob, & Schlesinger, 2017; Huston, 2018). It is through applied research that scientists have come to appreciate the full range of contextual influences on development and how factors such as sex, ethnicity, and socioeconomic status influence development.

Intersectionality and Development

Adolescents interact with family, peers, teachers, and other individuals, influencing and being influenced by them. In our discussion of Bronfenbrenner's bioecological model, we have seen that adolescents are immersed in many interacting contexts, such as home, school, and neighborhood. Adolescents' experiences in these settings and the sense they make of these experiences varies dramatically with demographic variables, such as gender, race and ethnicity, sexual orientation, and socioeconomic status, for example. There is a growing awareness among developmental scientists that the effects of demographic variables are not universal (Ghavami, Katsiaficas, & Rogers, 2016; Godfrey & Burson, 2018). Instead, individuals' unique experiences and perspectives are influenced by **intersectionality**, the dynamic interrelations of demographic factors, such as gender, race and ethnicity, and sexual orientation, and social factors, such as socioeconomic status and disabilities (Crenshaw, 1989).

We are all members of multiple intertwined social categories, such as gender, race, and sexual orientation. Our understanding of each category is influenced by our membership in other categories. For example, adolescents' understanding of gender may be filtered through the lens of their membership in another social category, such as ethnicity. In turn, their experiences as members of an ethnic group are intertwined with their gender. For example, Latina girls' views of themselves and their worlds may be quite different from those of Latinx boys as well as girls of other ethnicities, such as Black or Asian American girls. In this example,

the intersection of ethnicity and gender combine to influence girls' self-understanding. Most people are members of multiple social categories, in addition to ethnicity and gender, that interact to influence their perception. The importance of social categories and the meaning ascribed to them vary with context, such that social categories such as gender, race, and sexual orientation may be more salient and meaningful in some contexts and at some times than others.

Intersectionality emphasizes a contextual approach toward understanding how perceptions, stereotypes, and discrimination about gender, ethnicity and race, sexual orientation, and socioeconomic status, for example, overlap and interlock, creating distinct experiences for subgroup members with implications for development (Crenshaw, 1989; Syed & Ajayi, 2018). For instance, intersecting expectations about race and gender may uniquely shape the experience of Black boys in classroom settings, how they are perceived and treated, that is unique from those experienced by boys of other races and ethnicities and the experiences of Black girls—with implications for their academic performance, development, and long-term outcomes (Roy, 2018). Until recently, people of color have been largely excluded from research studies or research participants of all ethnicities and races have been grouped, masking differences and contributing to a sense of invisibility among people of color (Syed, Santos, Yoo, & Juang, 2018). For example, one analysis of articles published between 2006 and 2010 in leading developmental science journals (*Developmental Psychology*, *Child Development*, and *Developmental Science*) found that only 14% included samples that were predominantly people of color and a surprisingly high 28% did not mention the racial/ethnic composition at all (Nielsen, Haun, Kärtner, & Legare, 2017).

The study of intersectionality sheds light on how discrimination, marginalization, oppression, and privilege combine to influence adolescents' experiences in unique ways (Crenshaw, 1989). Intersectionality is an emerging approach in developmental science with a small but rapidly growing body of research that recognizes the many ways that gender, ethnicity and race, sexual orientation, socioeconomic status, and disability interact to influence development (Godfrey & Burson, 2018). Throughout this book, we will examine adolescent development through an intersectional lens whenever possible.

Research Ethics and Applied Developmental Science

Researchers have responsibilities to conduct research that is scientifically sound. They are also obligated to adhere to standards of ethical conduct in research. Research with adolescents can pose tricky ethical questions. For example, suppose a researcher wanted to determine the effects of an illegal drug on adolescent brain development or the effects of bullying on emotional development. Would it be possible to design a study in which some adolescents were assigned to ingest the illegal drug or a study in which adolescents are exposed to bullying? Of course not. These studies violate the basic ethical principles that guide developmental scientists' work: (1) beneficence and nonmaleficence, (2) responsibility, (3) integrity, (4) justice, and (5) respect for autonomy (American Psychological Association, 2010).

Beneficence and nonmaleficence are the dual responsibilities to do good and to avoid doing harm. Researchers must protect and help the individuals, families, and communities with which they work by maximizing the benefits and minimizing the potential harms of their work. Above all, participating in research must never pose threats to adolescents beyond those they might encounter in everyday life. Researchers also have the responsibility to help participants, for example, by directing a distressed adolescent toward help-seeking resources.

The ethical principle of **responsibility** requires that researchers act responsibly by adhering to professional standards of conduct and clarifying their obligations and roles to others. For example, a researcher conducting interviews with adolescents and parents must clarify her role as scientist and not counselor and help her participants understand that she is simply gathering information from them rather than conducting therapy. Researchers' responsibility extends beyond their participants to society at large. Sometimes researchers' findings have social and political implications that they may not expect. For example, one highly publicized study compiled the results of many research studies examining college students who had become sexually involved with an adult prior to reaching the legal age of consent (Rind, Tromovitch, & Bauserman, 1998). The scientists concluded that the young people's adjustment and development varied widely and depended on a number of factors within the individual, situation, and broader context. The participants who were older when the relationship began, such as in late adolescence, just prior to reaching the age of consent, showed fewer negative effects and appeared to be well adjusted. These findings were misinterpreted by some organizations, media outlets, and politicians as suggesting that sexual involvement with minors was acceptable or even beneficial, which was clearly not the researchers' conclusion (Garrison & Kobor, 2002). Although it is not always easy to anticipate how research findings might be portrayed in the media and understood by the public, the principle of responsibility means that researchers must attempt to foresee ways in which their results may be misinterpreted and correct any misinterpretations that occur (Lilienfeld, 2002; Society for Research in Child Development, 2007).

The principle of **integrity** requires that scientists be accurate, honest, and truthful in their work by being mindful of the promises they make to participants and making every effort to keep their promises. According to the principle of **justice**, the risks and benefits of research participation must be spread equitably across individuals and groups. Every participant should have access to the contributions and benefits of research. For example, when an intervention is found to be successful, all participants must be given the opportunity to benefit from it.

Perhaps the most important principle of research ethics is **respect for autonomy**. Scientists have a special obligation to respect participants' autonomy, their ability to make and implement decisions. Ethical codes of conduct require that researchers protect participants' autonomy by obtaining **informed consent**—participants' informed, rational, and voluntary agreement to participate. Soliciting informed consent requires providing the individuals under study information about the research study, answering questions, and ensuring that they understand that they are free to decide not to participate in the research study and that they will not be penalized if they refuse. Respecting people's autonomy also means protecting those who are not capable of making judgments and asserting themselves. Parents provide parental permission for their minor children to participate because researchers (and lawmakers) assume that minors are not able to meet the rational criteria of informed consent. Although adolescents are minors, their growing capacities for decision-making require researchers to seek their agreement to participate in ways that are appropriate to their age and developmental capacities. Adolescents must provide their **assent** to participate (Tait & Geisser, 2017). For example, a researcher about to administer early adolescents a questionnaire about their experiences with parental divorce might explain the kinds of questions the adolescents will encounter; explain that, in some cases, a question might feel personal and might bring up memories; remind the adolescents that they are free to stop or skip any questions they choose; and, finally, remind the adolescents that if they feel uncomfortable or would like to talk to someone about their feelings about the issues examined in the study, a counselor is available or the researcher can help them find someone who can help them. Seeking assent from adolescents has the benefit of helping them learn how to make decisions and participate in decision-making within safe contexts (Oulton et al., 2016).

Ethical Issues in Studying Adolescents

Studying adolescents often raises unique ethical questions. For example, adolescent research participants are often very concerned about how their information and samples will be used and, in particular, whether information would be shared with their parents (Crane & Broome, 2017). Adolescents and parents tend to have different opinions about research disclosures; parents often want to receive their children's research information, but adolescents tend to report wanting to withhold private and sensitive findings (Brawner, Volpe, Stewart, & Gomes, 2013).

Sometimes seeking consent from parents may interfere with researchers' goals or may pose risks to minor participants. In one study, lesbian, gay, bisexual, and transgender (LGBT) adolescents believed that participating in research on sexuality and health is important for advancing science, yet they indicated that they would not participate if guardian permission were required, citing negative parental attitudes or not being "out" about their LGBT identity (Macapagal, Coventry, Arbeit, Fisher, & Mustanski, 2017). As one 15-year-old bisexual participant explained,

> I believe it could harm some [teens] because the risk of being let out of the closet. I know some people whose family would not approve of any other sexuality [other than heterosexuality]. Such as my own, my mother would turn on me for not being her perfect image.

In response to these ethical challenges, researchers frequently obtain **passive consent** for conducting research on sensitive topics with adolescents. Passive consent procedures typically involve notifying parents about the research and requiring them to reply if they do *not* want their child to participate.

Another issue developmental scientists face in studying adolescents is that the researchers' desire to learn about development and solve problems may conflict with the need to protect adolescents in research studies. For example, researchers generally promise participants, including adolescents, **confidentiality**, that their responses will remain confidential and will not be disclosed to others. Suppose a researcher studying adolescents learns that a participant is in jeopardy, whether engaging in health-compromising behaviors (e.g., cigarette smoking, unsafe driving, or unhealthy behavior), contemplating suicide, or engaging in illegal or harmful activities (e.g., drug addiction, stealing, or violence). Does the researcher have a duty to disclose the risk to an outside party that can help the adolescent, such as parents? Does the researcher's promise of confidentiality outweigh the duty to disclose?

Researchers who study risky and health-compromising behaviors *expect* to encounter participants who are engaged in potentially dangerous activities. Helping the adolescent might involve removing him or her from the study and may potentially compromise the study. In addition, adolescents generally expect that researchers will maintain confidentiality

(Fisher et al., 1996); violating their confidentiality may be harmful. Is there ever an instance in which a researcher should break confidentiality and disclose information about an at-risk adolescent? Ethical guidelines published by research and medical associations address researchers' obligations to help and not harm and to protect participants' confidentiality, but they generally fail to offer specific recommendations about how researchers can manage the conflicting duties to maintain confidentiality and disclose participant problems (Hiriscau, Stingelin-Giles, Stadler, Schmeck, & Reiter-Theil, 2014; Sharkey, Reed, & Felix, 2017). Instead, researchers must decide for themselves how to balance their sometimes conflicting obligations to their adolescent participants. ●

REVIEW 1.5

1. What is intersectionality?
2. Describe ethical principles that apply to researchers' work.
3. What are some ethical issues that may arise when studying adolescents?

THINKING IN CONTEXT 1.5

1. Consider the social categories of which you are a member (perhaps gender, race or ethnicity, socioeconomic status, or religion). Which are most important to you? How might these social categories interact to influence your experiences? What are some of the challenges of studying development through an intersectional lens?
2. Researchers may commonly encounter adolescents with problems, big and small. What kinds of problems do you think merit a researcher taking action? In those cases, what action should a researcher take? Is it ever permissible to do nothing? To tell a parent? What guidelines would you use in making these decisions?

APPLY 1.5

As an adolescent development researcher, you are planning to conduct a study on risky behavior with high school students.

1. Imagine your participants. Describe their characteristics. Provide examples of intersectionality and anticipate how intersections of ethnicity and race, socioeconomic status, and gender might affect participants' responses.
2. In your view, what ethical principle is the most important for you to uphold? Why?
3. What are the pros and cons of parental consent and passive consent? Which would you choose?

CHAPTER SUMMARY

1.1 Discuss the historical origins of adolescence and evidence for popular stereotypes about adolescents.

The transition from childhood to adulthood, known as adolescence, occurs over many years. Although philosophers described the period of adolescence, adolescents were treated much like adults until the 19th century. Several social changes occurred from 1890 to 1920, making this time the Age of Adolescence. G. Stanley Hall is credited with beginning the scientific study of adolescence. Hall believed that adolescence was characterized by universal upheaval, storm, and stress. However, current research suggests that turmoil is not universal or healthy. Instead, most researchers propose a modified storm-and-stress view, in which problems are more likely to emerge during adolescence but are not inevitable. Despite this, stereotypes about adolescence abound.

1.2 Analyze the developmental processes, contexts, and timing of adolescence and emerging adulthood.

Adolescence is characterized by biological and social transitions. Although its boundaries are a source of

debate, adolescence can be defined in three phases: early adolescence (age 10 to 14), middle adolescence (age 14 to 16), and late adolescence (age 16 to 18). Emerging adulthood (roughly age 18 to 25) is a period distinct from adolescence and adulthood in which young people have diverse experiences, experience instability, engage in identity development, and feel somewhat in between, neither adolescent nor adult. Adolescents experience interacting changes in physical, cognitive, and socioemotional development and they undertake several developmental tasks: establishing a sense of identity, autonomy, sexuality, and intimacy. All of these changes take place in several contexts in which adolescents are immersed, such as home, school, peer, neighborhood, and culture.

1.3 Summarize theoretical approaches to studying adolescent development.

Developmental scientists explain their observations by constructing theories of human development. Psychoanalytic theories describe development and behavior as a result of the interplay of inner drives,

memories, and conflicts we are unaware of and cannot control. Whereas Freud emphasized sexuality, Erikson described identity development as the task of adolescence. Behaviorist and social learning theory emphasize environmental influences on behavior, such as operant conditioning and observational learning. Cognitive theorists view cognition as essential to understanding people's functioning. Piaget's cognitive-developmental theory describes cognitive development as an active process; adolescents achieve the final stage of his scheme, formal operations. Vygotsky emphasized the importance of context and culture in influencing development. Information processing theorists study the steps involved in cognition: perceiving and attending, representing, encoding, retrieving, and problem-solving. Bronfenbrenner's bioecological model explains development as a function of the ongoing reciprocal interaction among biological and psychological changes in the person and his or her changing context.

1.4 Describe methods and designs used to study adolescent development.

A case study is an in-depth examination of an individual. Observational measures are methods that scientists use to collect and organize information based on watching and monitoring people's behavior. Interviews and questionnaires are called self-report measures because they ask the persons under study questions about their own experiences,

attitudes, opinions, beliefs, and behavior. Physiological measures gather the body's physiological responses as data. Scientists use correlational research to describe relations among measured characteristics, behaviors, and events. To test hypotheses about causal relationships among variables, scientists employ experimental research. Developmental designs include cross-sectional research, which compares groups of people at different ages simultaneously, and longitudinal research, which studies one group of participants at many points in time. Cross-sequential research combines the best features of cross-sectional and longitudinal designs by assessing multiple cohorts over time.

1.5 Explain the scope of applied developmental science and some of the challenges that arise in this field.

Applied developmental science refers to the study of developmental processes outside of the laboratory, studying individuals within the contexts in which they live and applying research findings to improve people's lives. Recently, applied developmental scientists have begun to study development through an intersectional lens, recognizing that individuals' experiences and perceptions vary with their membership in intersecting social categories, such as gender, race, and sexual orientation. Several ethical principles guide applied developmental scientists' work: beneficence and nonmaleficence, responsibility, integrity, justice, and respect for autonomy. Studying adolescents raises ethical issues such as the use of confidentiality and passive consent.

KEY TERMS

adolescence, 4

applied developmental science, 24

assent, 26

autonomy, 11

behaviorism, 14

beneficence and nonmaleficence, 25

bioecological systems theory, 17

case study, 21

chronosystem, 18

cognitive development, 10

cognitive-developmental perspective, 15

cognitive schema, 15

cohort, 22

computerized tomography (CT), 20

confidentiality, 26

context, 11

correlational research, 21

cross-sectional research study, 22

culture, 15

data, 19

dependent variable, 21

developmental science, 13

diffusion tensor imaging (DTI), 21

early adolescence, 8

electroencephalography (EEG), 20

emerging adulthood, 8

emotion regulation, 10

exosystem, 18

experimental research, 21

formal operational reasoning, 15

functional magnetic resonance imaging (fMRI), 21

identity, 10

identity development, 9

independent variable, 22

information processing theory, 16

informed consent, 26

integrity, 26

intersectionality, 24

intimacy, 11