Chapter 1

An Introduction to Lifespan Development

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Learning Objectives

LO 1.1 Define the field of lifespan development and describe what it encompasses.

LO 1.2 Describe the areas that lifespan development specialists cover.

LO 1.3 Describe some of the basic influences on human development.

LO 1.4 Summarize four key issues in the field of lifespan development.

LO 1.5 Describe how the psychodynamic perspective explains lifespan development.

LO 1.6 Describe how the behavioral perspective explains lifespan development.

LO 1.7 Describe how the cognitive perspective explains lifespan development.

LO 1.8 Describe how the humanistic perspective explains lifespan development.

LO 1.9 Describe how the contextual perspective explains lifespan development.

LO 1.10 Describe how the evolutionary perspective explains lifespan development.

LO 1.11 Discuss the value of applying multiple perspectives to lifespan development.

LO 1.12 Describe the role that theories and hypotheses play in the study of development.

LO 1.13 Compare the two major categories of lifespan development research.

LO 1.14 Identify different types of correlational studies and their relationship to cause and effect.

LO 1.15 Explain the main features of an experiment.

LO 1.16 Distinguish between theoretical research and applied research.

LO 1.17 Compare longitudinal research, cross-sectional research, and sequential research.

LO 1.18 Describe ethical issues that affect psychological research.

Chapter Overview

Prologue: Pandemic

Henry Padilla was born on April 30 during the first year of the coronavirus disease 2019 (COVID-19) pandemic. Three weeks prior, his mother, Estella had suffered a mild case of COVID-19 and was terrified that her baby would be affected. But in every way it was a routine delivery, and Henry, who weighed 7 pounds, 6 ounces, was a healthy newborn.

* * *

On the same day in April that Henry was born, Mia Signorelli, 8 years old, was being homeschooled in her apartment in Brooklyn, New York. Her school had already been closed for weeks during the pandemic, and she communicated with her third grade teacher online. Although the teacher provided lesson plans, her parents struggled to help her and felt totally inadequate as instructors. As for Mia, although she missed her friends and running through the park across from her apartment, she was glad school was closed.

* * *

Ana Parnosky and Lilibeth Stein, 42-year-old parents of Alex Parnosky-Stein, had begun to feel like prison wardens. Trying to keep Alex safe from the ravages of the pandemic, they never let him leave the confines of their suburban home in Las Vegas. But for Alex, a high school junior, being stuck at home felt like torture. He constantly fought with his parents, and he missed going out with his buddies and being with his girlfriend. If he hadn't had his cell phone to stay in touch with his friends, he felt he'd go nuts.

Looking Ahead

Each of these people was profoundly affected in unique ways by the COVID-19 pandemic. Still, their development, from infancy onward, has followed predictable patterns. Although the specifics of our own development vary—some of us encounter economic

deprivation or live in war-torn territories; others contend with family issues like divorce and stepparents—the broad strokes of the development that is set in motion the moment we are conceived are remarkably similar for all of us. Like LeBron James, Jeff Bezos, and Queen Elizabeth II of England, each and every one of us has traversed the territory known as lifespan development.

Issues ranging from cloning and the consequences of poverty on development to the effects of culture and race raise significant developmental concerns. Underlying these are even more fundamental issues. How do people develop physically over the course of their lives? How does their understanding of the world grow and change as they age? And how do their personalities and their social world develop as they move from birth through the end of their lives?

Each of these questions, and many others we'll encounter throughout this book, are central to the field of lifespan development. As a field, lifespan development encompasses not only a broad span of time—from before birth to death—but also a wide range of areas of development. Consider, for example, the range of interests that different specialists in lifespan development focus on when considering the individuals we met in the prologue:

- Specialists in lifespan development who study physical growth and development might examine how the biological endowment from Henry's mother affects his later behavior and whether Henry's growth was affected by his mother's illness before he was born.
- Lifespan development specialists who investigate the ways thinking changes over the course of the lifespan might examine how Mia's understanding of the nature of the pandemic became more sophisticated as she grew older and how the home-schooling she received affected her academic development over the remainder of her years in school.
- Lifespan development experts who specialize in the social and personality development might look at the ways that Alex's relationships with his parents and friends would change as a result of the pandemic quarantine that he endured.

Although their interests take many forms, these specialists in lifespan development share one concern: understanding the growth and change that occur during the course of life. Taking different approaches, developmentalists study how both the biological inheritance from our parents and the environment in which we live jointly affect our behavior.

Some developmentalists focus on explaining how our genetic background can determine not only how we look but also how we behave and relate to others in a consistent manner—that is, matters of personality. They explore ways to identify how much of our potential as human beings is provided—or limited—by heredity. Other lifespan development specialists look to the environment, exploring ways in which our lives are shaped by the world that we encounter. They investigate the extent to which we are shaped by our early environments and how our current circumstances influence our behavior in both subtle and obvious ways.

Whether they focus on heredity or environment, all developmental specialists acknowledge that neither heredity nor environment alone can account for the full range of human development and change. Instead, our understanding of people's development requires that we look at the interaction of heredity and environment, attempting to grasp how in the end, both contribute to human behavior.

In this chapter, we orient ourselves to the field of lifespan development. We begin with a discussion of the scope of the discipline, illustrating the wide array of topics it covers and the full range of ages, from conception to death, that it examines. We also survey the key issues and controversies of the field and consider the broad perspectives that developmentalists take. Finally, we discuss the ways developmentalists use research to ask and answer questions.

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Many children struggled with online learning at the height of the COVID-19 pandemic.

An Orientation to Lifespan Development

Have you ever wondered how it is possible that an infant tightly grips your finger with tiny, perfectly formed hands? Or marveled at the way an adolescent can make involved decisions about whom to invite to a party? Or wondered what it is that makes a grandfather at 80 so similar to the father he was when he was 40?

If you've ever contemplated such things, you are asking the kinds of questions that scientists in the field of *lifespan development* pose. In this section, we'll examine how the field of lifespan development is defined, the scope of the field, and some basic influences on human development.

Defining Lifespan Development

LO 1.1 Define the field of lifespan development and describe what it encompasses.

lifespan development
the field of study that examines patterns of growth, change, and stability in behavior that occur throughout the entire life span

Lifespan development is the field of study that examines patterns of growth, change, and stability in behavior that occur throughout the entire life span. Although the definition of the field seems straightforward, the simplicity is somewhat misleading. To understand what development is actually about, we need to look deeper into the various parts of the definition.

In its study of growth, change, and stability, lifespan development takes a *scientific* approach and is situated within the broader field of developmental science. *Developmental science* is an interdisciplinary field that draws from biology, psychology, anthropology, sociology, education, and other related disciplines to address the issues of human development (Golinkoff et al., 2016; Ghavami et al., 2016; Wang, 2018).

Like members of other scientific disciplines, researchers in lifespan development test their assumptions about the nature and course of human development by applying scientific methods. As we'll see later in the chapter, they develop theories about development, and they use methodical, scientific techniques to validate the accuracy of their assumptions systematically.

Lifespan development focuses on *human* development. Although there are developmentalists who study the course of development in nonhuman species, the vast majority examine growth and change in people. Some seek to understand universal principles of development, whereas others focus on how cultural, racial, and ethnic differences affect the course of development. Still others aim to understand the unique aspects of individuals, looking at the traits and characteristics that differentiate one person from another. Regardless of approach, however, all developmentalists view development as a continuing process throughout the life span.

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How people grow and change over the course of their lives is the focus of lifespan development.

As developmental specialists focus on the ways people change and grow during their lives, they also consider stability in people's lives. They ask in which areas, and in what periods, people show change and growth and when and how their behavior reveals consistency and continuity with prior behavior.

Finally, developmentalists assume that the process of development persists throughout every part of people's lives, beginning with the moment of conception and continuing until death. Developmental specialists assume that in some ways people continue to grow and change right up to the end of their lives, whereas in other respects, their behavior remains stable. At the same time, developmentalists believe that no particular, single period of life governs all development. Instead, they believe that every period of life contains the potential for both

growth and decline in abilities and that individuals maintain the capacity for substantial growth and change throughout their lives.

The Scope of the Field of Lifespan Development

LO 1.2 Describe the areas that lifespan development specialists cover.

Clearly, the definition of lifespan development is broad, and the scope of the field is extensive. Consequently, lifespan development specialists cover quite diverse areas, and a typical developmentalist will choose to specialize in both a topical area and an age range.

TOPICAL AREAS IN LIFESPAN DEVELOPMENT. Some developmentalists focus on **physical development**, examining the ways in which the body's makeup—the brain, nervous system, muscles, senses, and the need for food, drink, and sleep—help determine behavior. For example, one specialist in physical development might examine the effects of malnutrition on the pace of growth in children, and another might look at how athletes' physical performance declines during adulthood (Fell & Williams, 2008; Muiños & Ballesteros, 2014).

physical development
development involving the body's physical makeup, including the brain, nervous system, muscles, and senses, and the need for food, drink, and sleep

Other developmental specialists examine **cognitive development**, seeking to understand how growth and change in intellectual capabilities influence a person's behavior. Cognitive developmentalists examine learning, memory, problem-solving skills, and intelligence. For example, specialists in cognitive development might want to see how problem-solving skills change over the course of life or whether cultural differences exist in the way people explain their academic successes and failures (Coates, 2016; Mougrabi-Large & Zhou, 2020).

cognitive development
development involving the ways that growth and change in intellectual capabilities influence a person's behavior

Finally, some developmental specialists focus on personality and social development. **Personality development** is the study of stability and change in the enduring characteristics that differentiate one person from another over the life span. **Social development** is the way in which individuals' interactions with others and their social relationships grow, change, and remain stable over the course of life. A developmentalist interested in personality development might ask whether there are stable, enduring personality traits throughout the life span, whereas a specialist in social development might examine the effects of racism or poverty or divorce on development (Manning et al., 2017; Atherton et al., 2020). These four major topic areas—physical, cognitive, social, and personality development—are summarized in Table 1-1.

personality development
development involving the ways that the enduring characteristics that differentiate one person from another change over the life span

social development
the way in which individuals' interactions with others and their social relationships grow, change, and remain stable over the course of life

AGE RANGES AND INDIVIDUAL DIFFERENCES. In addition to choosing to specialize in a particular topical area, developmentalists also typically look at a particular age range. The life span is usually divided into broad age ranges: the prenatal period (the period from conception to birth), infancy and toddlerhood (birth to age 3), the preschool period (ages 3 to 6), middle childhood (ages 6 to 12), adolescence (ages 12 to 20), young adulthood (ages 20 to 40), middle adulthood (ages 40 to 65), and late adulthood (age 65 to death).

It's important to keep in mind that these broad periods—which are largely accepted by lifespan developmentalists—are social constructions. A *social construction* is a shared notion of reality, one that is widely accepted but is a function of society and culture at a given time. Consequently, the age ranges within a period—and even the periods themselves—are in many ways arbitrary and are often culturally derived. For example, later in the book we'll discuss how the concept of childhood as a separate period did not even exist during the 17th century; at that time, children and adults were seen as little different from one another except in terms of size. Furthermore, although some periods have a clear-cut boundary (infancy begins with birth, the preschool period ends with entry into elementary school, and adolescence starts with sexual maturity), others don't.

Mohamed Khidir/Xinhua/Alamy Stock Photo

This wedding of two children in Sudan is an example of how cultural factors can play a significant role in determining the age when a particular event is likely to occur.

For instance, consider the period of young adulthood, which at least in Western cultures is typically assumed to begin at age 20. That age, however,

Table 1-1 Approaches to Lifespan Development

Topical Area	Defining Characteristics	Examples of Questions Researchers Ask*
Physical development  Shutterstock	Emphasizes how the brain, nervous system, muscles, sensory capabilities, and needs for food, drink, and sleep affect behavior	• What determines the sex of a child? (2) • What are the long-term results of premature birth? (3) • What are the benefits of breast milk? (4) • What are the consequences of early or late sexual maturation? (11) • What leads to obesity in adulthood? (13) • How do adults cope with stress? (15) • What are the outward and internal signs of aging? (17) • How do we define death? (19)
Cognitive development  cozyta/Shutterstock	Emphasizes intellectual abilities, including learning, memory, problem solving, and intelligence	• What are the earliest memories that can be recalled from infancy? (5) • What are the intellectual consequences of watching television? (7) • Do spatial reasoning skills relate to music practice? (7) • Are there benefits to bilingualism? (9) • How does an adolescent's egocentrism affect their view of the world? (11) • Are there ethnic and racial differences in intelligence? (9) • How does creativity relate to intelligence? (13) • Does intelligence decline in late adulthood? (17)
Personality and social development  AJ_Watt/E+/Getty Images	Emphasizes enduring characteristics that differentiate one person from another and how interactions with others and social relationships grow and change over the life span	• Do newborns respond differently to their caregivers than to others? (3) • What is the best strategy for disciplining children? (8) • When does a sense of gender identity develop, and how do sex and gender provide a context for development? (8) • How can we promote cross-race friendships? (10) • What are the causes of adolescent suicide? (12) • How do we choose a romantic partner? (14) • Do the effects of parental divorce last into old age? (18) • Do people withdraw from others in late adulthood? (18) • What are the emotions involved in confronting death? (19)

*Numbers in parentheses indicate in which chapter the question is addressed.

is notable only because it marks the end of the teenage period. In fact, for many people, such as those enrolled in higher education, the age change from 19 to 20 has little special significance, coming as it does in the middle of the college years. For them, more substantial changes may occur when they leave college and enter the workforce, which is more likely to happen around age 22. Furthermore, in some non-Western cultures, adulthood may be considered to start much earlier, when children whose educational opportunities are limited begin full-time work.

In fact, some developmentalists have proposed entirely new developmental periods. For instance, psychologist Jeffrey Arnett argues that adolescence extends into *emerging adulthood*, a period beginning late in the teenage years and continuing into the mid-20s. During emerging adulthood, people are no longer adolescents, but they haven't fully taken on the responsibilities of adulthood. Instead, they are still trying out different identities and engaging in self-focused exploration (Sumner et al., 2015; Arnett, 2016; Zorotovich & Johnson, 2019).

In short, there are substantial *individual differences* in the timing of events in people's lives. In part, this is a biological fact of life: People mature at different rates and reach developmental milestones at different points. However, environmental factors also play a significant role in determining the age at which a particular event is likely to occur. For example, the typical age of marriage varies substantially from one culture to another, depending in part on the functions that marriage plays in a given culture.

It is important to keep in mind, then, that when developmental specialists discuss age ranges, they are talking about averages—the times when people, on average, reach particular milestones. Some people will reach the milestone earlier, some later, and many will reach it around the time of the average. Such variation becomes noteworthy only when children show substantial deviation from the average. For example, parents whose child begins to speak at a much later age than average might decide to have their child evaluated by a speech therapist.

THE LINKS BETWEEN TOPICS AND AGES. Each of the broad topical areas of lifespan development—physical, cognitive, social, and personality development—plays a role throughout the life span. Consequently, some developmental experts focus on physical development during the prenatal period, and others during adolescence. Some might

specialize in social development during the preschool years, whereas others look at social relationships late in adulthood. Still others might take a broader approach, looking at cognitive development through every period of life.

In this course, we'll take a comprehensive approach, proceeding chronologically from the prenatal period through late adulthood and death. Within each period, we'll look at different topical areas: physical, cognitive, social, and personality development. Furthermore, we'll also be considering the impact of culture on development, as we discuss next.

Influences on Development

LO 1.3 Describe some of the basic influences on human development.

Bob, born in 1947, is a baby boomer; he was born soon after the end of World War II, when an enormous surge in the birth rate occurred as soldiers returned to the United States from overseas. He was an adolescent at the height of the civil rights movement and the beginning of protests against the Vietnam War. His mother, Leah, was born in 1922. She died at the age of 96, and she was part of the generation that passed its childhood and teenage years in the shadow of the Great Depression. Bob's son, Jon, was born in 1975. Now middle-aged and established in a career and raising his own family, he is a member of what has been called Generation X. Jon's younger sister, Sarah, who was born in 1982, is part of the next generation, which sociologists have called the Millennial Generation. She now is raising a preschooler of her own after finishing graduate school and starting her career. Having lived through the COVID-19 pandemic, she suspects that her children will be affected by it for the rest of their lives.

These people are, in part, products of the social times in which they live. Each belongs to a particular **cohort**, a group of people born at around the same time in the same place. Such major social events as wars, economic upturns and depressions, famines, and pandemics (like COVID-19) work similar influences on members of a particular cohort (Twenge et al., 2015; Simons et al., 2021).

cohort
a group of people born at around the same time in the same place

Cohort effects provide an example of *history-graded influences*, which are biological and environmental influences associated with a particular historical moment. For instance, people who lived in New York City during the 9/11 terrorist attack on the World Trade Center experienced shared biological and environmental challenges due to the attack. Their development is going to be affected by this normative history-graded event (Kim et al., 2016; Liu & Lim, 2020).

In contrast, *age-graded influences* are biological and environmental influences that are similar for individuals in a particular age group, regardless of when or where they are raised. For example, biological events such as puberty and menopause are universal events that occur at relatively the same time throughout all societies. Similarly, a sociocultural event such as entry into formal education can be considered an age-graded influence because it occurs in most cultures around age 6.

From *an Educator's* Perspective

How would a student's cohort membership affect their readiness for school? For example, what would be the benefits and drawbacks of growing up in a cohort in which cell phone use was routine, compared with previous cohorts in which cell phone use was less common?

Development is also affected by *sociocultural-graded influences*, the social and cultural factors present at a particular time for a particular individual, depending on such variables as race, ethnicity, social class, and subcultural membership. Similarly, children raised in remote and isolated areas of the African outback will experience significantly different upbringings from those raised in New York City (Rose et al., 2003; Chen & Zhou, 2019).

Finally, *non-normative* life events are specific, atypical events that occur in a person's life at a time when such events do not happen to most people. For example, a child whose parents die in an automobile accident when they are 6 years old has experienced a significant non-normative life event.

Developmental Diversity and Your Life

How Culture, Ethnicity, and Race Influence Development

In the United States, parents praise young children who ask a lot of questions for being "intelligent" and "inquisitive." The Dutch consider such children "too dependent on others." Italian parents judge inquisitiveness as a sign of social and emotional competence and not intelligence. Spanish parents praise character far more than intelligence, and Swedes value security and happiness above all.

What are we to make of these diverse parental expectations? Is one way of looking at children's inquisitiveness right and the others wrong? Probably not, if we take into consideration the cultural contexts in which parents operate. In fact, different cultures and subcultures have their own views of appropriate and inappropriate methods and interpretations of child-rearing, just as they have different developmental goals for children.

Specialists in child development must take into consideration broad cultural factors. For example, as we'll discuss further in Chapter 8, children growing up in Asian societies tend to have a *collectivistic orientation*, focusing on the interdependence among members of society. In contrast, children in Western societies are more likely to have an *individualistic orientation*, in which they concentrate on the uniqueness of the individual.

Similarly, child developmentalists must also consider ethnic, racial, socioeconomic, and gender differences if they are to achieve an understanding of how people change and grow throughout the life span. If these specialists succeed in doing so, not only can they attain a better understanding of human development, but they may also be able to derive more precise applications for improving the human social condition.

To complicate the study of diverse populations, the terms *ethnic group, ethnicity*, and *race* are often used inappropriately. *Ethnic group* and *ethnicity* relate to cultural background, nationality, religion, and language. Members of ethnic groups share a common cultural background and group history.

Race originated as a biological concept and initially referred to classifications based on physical and structural characteristics of species. But such a definition has little validity in terms of humans, and research shows that it is not a meaningful way to differentiate people.

Moreover, depending on how race is defined, various observers have claimed there are between 3 and 300 races. Many people are fluid in how they see their own race and ethnic group membership, as can be seen in Figure 1-1. Over time, 6 percent of U.S. Census respondents shift in terms of how they self-identify.

Furthermore, an increasing number of people view themselves as multiracial: For example, the number of non-Hispanic Americans who identify as multiracial increased by 127 percent. In short, race and ethnic group today are generally thought of as a social constructions, something defined by people and their beliefs (Liebler et al., 2017; Kung et al., 2018; Mosley et al., 2020; Tavernise et al., 2021).

In addition, there is little agreement about which names best reflect different races and ethnic groups. Should the term *African American*—which has geographical and cultural implications—be preferred over *Black*, which focuses primarily on skin color? Is *Native American* preferable to *Indian*? Is *Hispanic* more appropriate than *Latino or LatinX*? And how

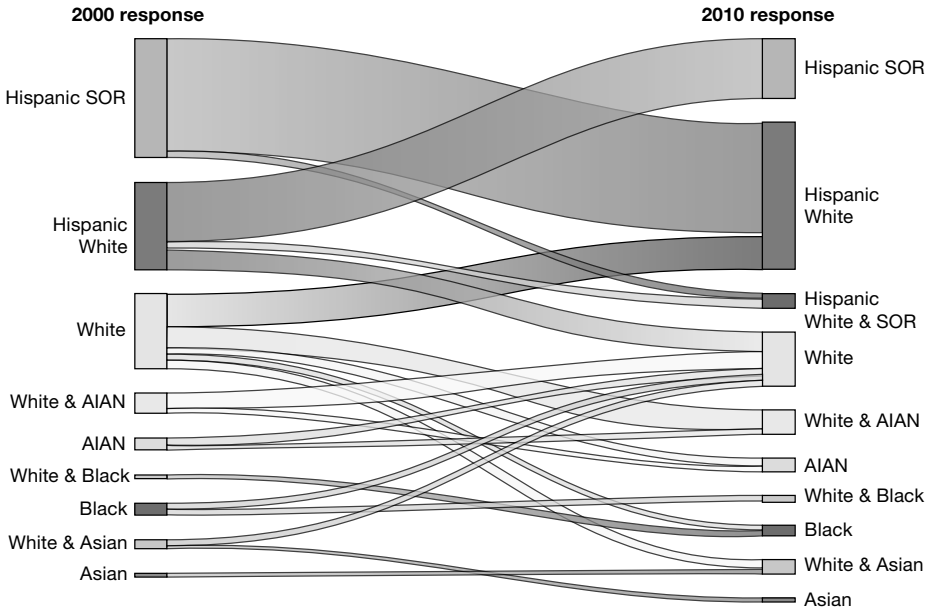

Figure 1-1 Shifting Race and Ethnicity

Six percent of U.S. Census respondents shift in the way that they answer questions about their own race and ethnic group membership. The top 20 changes between the 2000 and 2010 census in self-identification are shown here. The data support the idea that race and ethnicity are social constructions, defined largely by people and their beliefs. NOTE: SOR = Some other race; AIAN = American Indian and Alaska Native.

Elbert Wang, 2020*The Wall Street Journal*, citing data from Liebler, Porter, et al., 2017.

can researchers accurately categorize people with multiracial backgrounds?

To fully understand development, then, we need to take the complex issues associated with human diversity into account. In fact, it is only by looking for similarities and differences among various ethnic, cultural, and racial groups that developmental researchers can distinguish principles of development that are universal from ones that are culturally determined. In the years ahead, then, it is likely that lifespan development will move from a discipline that primarily focuses on North American and European development to one that encompasses development around the globe (Kloep et al., 2009; Jensen Arnett, 2017).

Relatedly, lifespan development specialists have increasingly considered issues of diversity, inclusion, and equity. In part as a consequence of the killing of George Floyd by a Minneapolis police officer and the emergence of social movements such as *Black Lives Matter,* researchers have sought to better understand *racism*, prejudice against others based on their race. Racism may be considered in terms of an individual's prejudice against others, but it also may be embodied in institutions such as schools and government. Researchers are studying both the devastating effects of racism and the ways that it can be reduced as we'll see in future chapters (Andoh, 2021; Osborne et al., 2021).


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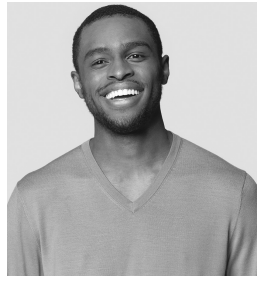
fizkes/Shutterstock


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The face of the United States is changing as the proportion of people from different backgrounds is increasing.

Key Issues and Questions: Determining the Nature—and Nurture—of Lifespan Development

LO 1.4 Summarize four key issues in the field of lifespan development.

Today, several key issues and questions dominate the field. Among the key issues (summarized in Table 1-2) are the nature of change, the importance of critical and sensitive periods, lifespan approaches versus more focused approaches, and the nature–nurture issue.

Most developmentalists agree that taking an either-or position on the continuous–discontinuous issue is inappropriate. Although many types of developmental change are continuous, others are clearly discontinuous.

Table 1-2 Key Issues in Lifespan Development

Continuous Change	*Discontinuous Change*
• Change is gradual. • Achievements at one level build on previous levels. • Underlying developmental processes remain the same over the life span.	• Change occurs in distinct steps or stages. • Behavior and processes are qualitatively different at different stages.
Critical Periods	***Sensitive Periods***
• Certain environmental stimuli are necessary for normal development. • Emphasized by early developmentalists.	• People are susceptible to certain environmental stimuli, but consequences of absent stimuli are reversible. • Current emphasis in lifespan development.
Lifespan Approach	***Focus on Particular Periods***
• Current theories emphasize growth and change throughout life; relatedness of different periods.	• Infancy and adolescence are emphasized by early developmentalists as most important periods.
Nature (Genetic Factors)	***Nurture (Environmental Factors)***
• Emphasis is on discovering inherited genetic traits and abilities.	• Emphasis is on environmental influences that affect a person's development.

CONTINUOUS CHANGE VERSUS DISCONTINUOUS CHANGE. One of the primary issues challenging developmentalists is whether development proceeds in a continuous or discontinuous fashion. In **continuous change**, development is gradual, with achievements at one level building on those of previous levels. Continuous change is quantitative in nature; the basic underlying developmental processes that drive change remain the same over the course of the life span. Continuous change, then, produces changes that are a matter of degree and not of kind. Changes in height prior to adulthood, for example, are continuous. Similarly, as we'll see later in the chapter, some theorists suggest that changes in people's thinking capabilities are also continuous, showing gradual quantitative improvements rather than developing entirely new cognitive processing capabilities.

continuous change
gradual development in which achievements at one level build on those of previous levels

In contrast, one can view development as being made up of primarily **discontinuous change**, occurring in distinct stages. Each stage or change brings about behavior that is assumed to be qualitatively different from behavior at previous stages. Consider the example of cognitive development again. We'll see later in the chapter that some cognitive developmentalists suggest that as we develop, our thinking changes in fundamental ways and that such development is not just a matter of quantitative change but of qualitative change.

discontinuous change
development that occurs in distinct steps or stages, with each stage bringing about behavior that is assumed to be qualitatively different from behavior at earlier stages

CRITICAL AND SENSITIVE PERIODS: GAUGING THE IMPACT OF ENVIRONMENTAL EVENTS. If a woman comes down with a case of rubella (German measles) in the first 20 weeks of pregnancy, the consequences for the child she is carrying are likely to be devastating: They include the potential for blindness, deafness, and heart defects. However, if she comes down with the exact same strain of rubella in week 30 of pregnancy, damage to the child is unlikely.

The differing outcomes of the disease in the two periods demonstrate the concept of critical periods. A **critical period** is a specific time during development when a particular event has its greatest consequences. Critical periods occur when the presence of certain kinds of environmental stimuli enable development to proceed normally or when exposure to certain stimuli results in abnormal development. For example, mothers who take drugs at particular times during pregnancy may cause permanent harm to their developing child (Nygaard et al., 2017; Vikram & Chindarkar, 2020; Golovin et al., 2021).

critical period
a specific time during development when a particular event has its greatest consequences and the presence of certain kinds of environmental stimuli is necessary for development to proceed normally

Although early specialists in lifespan development placed great emphasis on the importance of critical periods, more recent thinking suggests that in many realms, individuals are more malleable than was first thought, particularly in the domain of personality and social development. For instance, rather than suffering permanent damage from a lack of certain kinds of early social experiences, there is increasing evidence that people can use later experiences to their benefit to help them overcome previous deficits.

Consequently, developmentalists are now more likely to speak of sensitive periods rather than critical periods. In a **sensitive period**, individuals are particularly susceptible to certain kinds of stimuli in their environment. A sensitive period represents the optimal period for particular capacities to emerge, and individuals are particularly sensitive to environmental influences.

sensitive period
a point in development when individuals are particularly susceptible to certain kinds of stimuli in their environments, but the absence of those stimuli does not always produce irreversible consequences

It is important to understand the difference between the concepts of critical periods and sensitive periods. In critical periods, it is assumed that the absence of certain kinds of environmental influences is likely to produce permanent, irreversible consequences for the developing individual. In contrast, although the absence of particular environmental influences during a sensitive period may hinder development, it is possible for later experiences to overcome the previous deficits. In other words, the concept of sensitive periods recognizes the plasticity of developing humans (Piekarski et al., 2017; Byrne & Allen, 2019; Rosa-Salva et al., 2021).

LIFESPAN APPROACHES VERSUS A FOCUS ON PARTICULAR PERIODS. On which part of the life span should developmentalists focus their attention? For early developmentalists, the answers tended to be infancy and adolescence. Most attention was clearly concentrated on those two periods, largely to the exclusion of other parts of the life span.

Today, the story is different. For several reasons, developmentalists now believe that the entire life span is important. One is the discovery that developmental growth and change continue during every part of life—as we'll discuss throughout the chapters.

Furthermore, an important part of every person's environment is the presence of other people around them—the person's social environment. To fully understand the social influences on people of a given age, we need to understand the people who are in large measure providing those influences. For instance, to understand development in infants, we need to unravel the effects of their parents' ages on their social environments. A 15-year-old first-time mother will provide parental influences of a different sort from those provided by an experienced 37-year-old mother. Consequently, infant development is in part an outgrowth consequence of adult development.

In addition, as lifespan developmentalist Paul Baltes points out, development across the life span involves both gains and losses. With age, certain capabilities become more refined and sophisticated, whereas others involve loss of skill and capacity. For example, vocabulary tends to grow throughout childhood, and this growth continues through most of adulthood. At the same time, certain physical abilities, like reaction time, improve until early and middle adulthood, when they begin to decline (Ghisletta et al., 2010; Cerino et al., 2021).

People also shift in how they invest their resources (in terms of motivation, energy, and time) at different points during the life span. Early in life, more of one's personal resources are devoted to activities involving growth, such as studying or learning new skills. As one grows older, more resources are devoted to dealing with losses people face during late adulthood, such as declines in mobility or visual and hearing acuity (Gershuny et al., 2021).

THE RELATIVE INFLUENCE OF NATURE AND NURTURE ON DEVELOPMENT. One of the enduring questions of development involves how much of people's behavior is due to their genetically determined nature and how much is due to nurture, the influences of the physical and social environment in which a child is raised. This issue, which has deep philosophical and historical roots, has dominated a great deal of work in lifespan development (Wexler, 2006).

In this context, *nature* refers to traits, abilities, and capacities that are inherited from one's parents. It encompasses any factor that is produced by the predetermined unfolding of genetic information—a process known as **maturation**. These genetic, inherited influences are at work as we move from the one-cell organism that is created at the moment of conception to the billions of cells that make up a fully formed human. Nature influences whether our eyes are blue or brown, whether we have thick hair throughout life or eventually go bald, and how good we are at athletics. Nature allows our brains to develop in such a way that we can read the words in this chapter.

maturation
the predetermined unfolding of genetic information

In contrast, *nurture* refers to the environmental influences that shape behavior. Some of these influences may be biological, such as the impact of a pregnant mother's use of cocaine on her unborn child or the amount and kind of food available to children. Other environmental influences are more social, such as the ways parents discipline their children and the effects of peer pressure on an adolescent. Finally, some influences are a result of larger, societal-level factors, such as the socioeconomic circumstances in which people find themselves.

THE LATER ACTION OF NATURE AND NURTURE. If our traits and behavior were determined solely by either nature or nurture, there would probably be little debate regarding the issue. However, for most critical behaviors this is hardly the case. Take, for instance, one of the most controversial areas: intelligence. As we'll consider in detail in Chapter 9, the question of whether intelligence is determined primarily by inherited, genetic factors—nature—or is shaped by environmental factors—nurture—has caused lively and often bitter arguments that have spilled out of the scientific arena and into the realm of politics and social policy.

Consider the implications of the issue: If the extent of one's intelligence is primarily determined by heredity and consequently is largely fixed at birth, then efforts to improve intellectual performance later in life may be doomed to failure. In contrast, if intelligence is primarily a result of environmental factors, such as the amount and quality of schooling and stimulation to which one is exposed, then we would expect that an improvement in social conditions could bring about an increase in intelligence.

The extent of social policy affected by ideas about the origins of intelligence illustrates the significance of issues that involve the nature–nurture question. As we address this question in relation to several topical areas throughout this book, we should keep in mind that developmentalists reject the notion that behavior is the result solely of either nature *or* nurture. Instead, the question is one of degree—and the specifics of that, too, are hotly debated.

Furthermore, the interaction of genetic and environmental factors is complex, in part, because certain genetically determined traits have not only a direct influence on children's behavior, but also an indirect influence in shaping children's *environments*. For example, a child who is consistently cranky and who cries a great deal—a trait that may be produced by genetic factors—may influence their environment by making their parents so highly responsive to the insistent crying that whenever the child cries, the parents rush to comfort them. The parents' responsivity to the child's genetically determined behavior consequently becomes an environmental influence on the child's subsequent development (Barnes & Boutwell, 2012; Barlow, 2019).

Similarly, although our genetic background orients us toward particular behaviors, those behaviors will not necessarily occur in the absence of an appropriate environment. People with similar genetic backgrounds (such as identical twins) may behave in different ways, and people with highly dissimilar genetic backgrounds can behave quite similarly to one another in certain areas (Segal et al., 2015; Sudharsanan et al., 2016; Isungset et al., 2021).

In sum, the question of how much of a given behavior is due to nature, and how much to nurture, is a challenging one. Ultimately, we should consider the two sides of the nature–nurture issue as opposite ends of a continuum, with particular behaviors falling somewhere between the two ends. We can say something similar about the other controversies that we have considered. For instance, continuous versus discontinuous development is not an either-or proposition; some forms of development fall toward the continuous end of the continuum, whereas others lie closer to the discontinuous end. In short, few statements about development involve either-or absolutes (Verdejo-Garcia, 2020).

Module 1.1 Review

LO 1.1 Define the field of lifespan development and describe what it encompasses.

Lifespan development, a scientific approach to understanding human growth and change throughout life, encompasses physical, cognitive, social, and personality development.

LO 1.2 Describe the areas that lifespan development specialists cover.

Developmentalists focus on physical development, on cognitive development, and on personality and social development. In addition to choosing to specialize in a particular topical area, developmentalists also typically look at a particular age range.

LO 1.3 Describe some of the basic influences on human development.

Membership in a cohort, based on age and place of birth, subjects people to influences based on historical events (history-graded influences). People are also subject to age-graded influences, sociocultural-graded influences, and nonnormative life events. Culture and ethnicity also play an important role in development—both broad culture and aspects of culture, such as race, ethnicity, and socioeconomic status.

LO 1.4 Summarize four key issues in the field of lifespan development.

Four important issues in lifespan development are continuity versus discontinuity in development, the importance of critical periods, whether to focus on certain periods or on the entire life span, and the nature–nurture controversy.

Journal Prompt

Applying Lifespan Development: What are some examples of the ways culture (either broad culture or aspects of culture) affects human development?

Theoretical Perspectives on Lifespan Development

In Europe, there was no concept of "childhood" until the 17th century. Instead, children were simply thought of as miniature adults. They were assumed to be subject to the same needs and desires as adults, to have the same vices and virtues as adults, and to warrant no more privileges than adults. They were dressed the same as adults, and their work hours were the same as adults. Children also received the same punishments for misdeeds. If they stole, they were hanged; if they did well, they could achieve prosperity, at least so far as their station in life or social class would allow.

Library of Congress Prints and Photographs Division Washington, D.C. 20540 USA https://hdl.loc.gov/loc.pnp/pp.print

Society's view of childhood and what is appropriate to ask of children has changed through the ages. These children worked full-time in mines early in the 1900s.

This view of childhood seems wrong-headed now, but at the time it was what passed for lifespan development. From this perspective, there were no differences due to age; except for size, people were assumed to be virtually unchanging, at least on a psychological level, throughout most of the life span (Ariès, 1962).

Although, looking back across several centuries, it is easy to reject the medieval view of childhood, it is less clear how to formulate a contemporary substitute. Should our view of development focus on the biological aspects of change, growth, and stability over the life span? The cognitive or social aspects? Or some other factors?

People who study lifespan development approach the field from different perspectives. Each general perspective encompasses one or more *theories*—broad, organized explanations and predictions concerning phenomena of interest. A theory provides a framework for understanding the relationships among a seemingly unorganized set of facts or principles.

We all develop theories about development based on our experience, folklore, and what we read. However, theories in lifespan development are different. Whereas our own personal theories are built on unverified observations that are developed haphazardly, developmentalists' theories are more formal and are based on a systematic integration of prior findings and theorizing. These theories allow developmentalists to summarize and organize prior observations, and they also permit them to move beyond existing observations to draw deductions that may not be immediately apparent. In addition, these theories are then subject to rigorous testing in the form of research. By contrast, the developmental theories of individuals are not subject to such testing and may never be questioned at all.

We will consider six major theoretical perspectives used in lifespan development: the psychodynamic, behavioral, cognitive, humanistic, contextual, and evolutionary perspectives. Each emphasizes somewhat different aspects of development and steers developmentalists in particular directions. Furthermore, each perspective continues to evolve and change, as befits a growing and dynamic discipline.

The Psychodynamic Perspective: Focusing on the Inner Person

LO 1.5 Describe how the psychodynamic perspective explains lifespan development.

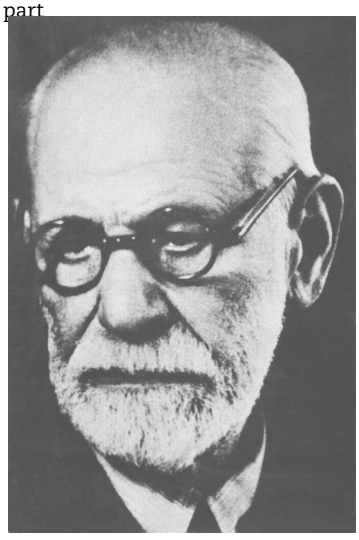
When Marisol was 6 months old, she was involved in a bloody automobile accident—or so her parents tell her because she has no conscious recollection of it. Now, however, at age 24, she is having difficulty maintaining relationships, and her therapist is seeking to determine whether her current problems are a result of that accident.

Looking for such a link might seem a bit far-fetched, but to proponents of the **psychodynamic perspective**, it is not so improbable. Advocates of the psychodynamic perspective believe that much of behavior is motivated by inner forces, memories, and conflicts

psychodynamic perspective the approach stating that behavior is motivated by inner forces, memories, and conflicts that are generally beyond people's awareness and control

psychoanalytic theory
the theory proposed by Sigmund Freud that suggests that unconscious forces act to determine personality and behavior

psychosexual development
according to Sigmund Freud, a series of stages that children pass through in which pleasure, or gratification, focuses on a particular biological function and body part



AISA - Everett/Shutterstock

Sigmund Freud.

of which a person has little awareness or control. The inner forces, which may stem from one's childhood, continually influence behavior throughout the life span.

FREUD'S PSYCHOANALYTIC THEORY. The psychodynamic perspective is most closely associated with a single person and theory: Sigmund Freud and his psychoanalytic theory. Freud, who lived from 1856 to 1939, was a Viennese physician whose revolutionary ideas ultimately had a profound effect not only on the fields of psychology and psychiatry but also on Western thought in general (Greenberg, 2012; Roth, 2016).

Freud's **psychoanalytic theory** suggests that unconscious forces act to determine personality and behavior. To Freud, the *unconscious* is a part of the personality about which a person is unaware. It contains infantile wishes, desires, demands, and needs that, because of their disturbing nature, are hidden from conscious awareness. Freud suggested that the unconscious is responsible for a good part of our everyday behavior.

According to Freud, everyone's personality has three aspects: id, ego, and superego. The *id* is the raw, unorganized, inborn part of personality that is present at birth. It represents primitive drives related to hunger, sex, aggression, and irrational impulses. The *ego* is the part of personality that is rational and reasonable. The ego acts as a buffer between the real world outside of us and the primitive id. Finally, the *superego* represents a person's conscience, incorporating distinctions between right and wrong. It begins to develop around age 5 or 6 and is learned from an individual's parents, teachers, and other significant figures.

In addition to providing an account of the various parts of the personality, Freud also suggested the ways in which personality developed during childhood. He argued that **psychosexual development** occurs as children pass through a series of stages in which pleasure, or gratification, is focused on a particular biological function and body part. As illustrated in Table 1-3, he suggested that pleasure shifts from the mouth (the *oral stage*) to the anus (the *anal stage*) and eventually to the genitals (the *phallic stage* and the *genital stage*).

Table 1-3 Freud's and Erikson's Theories

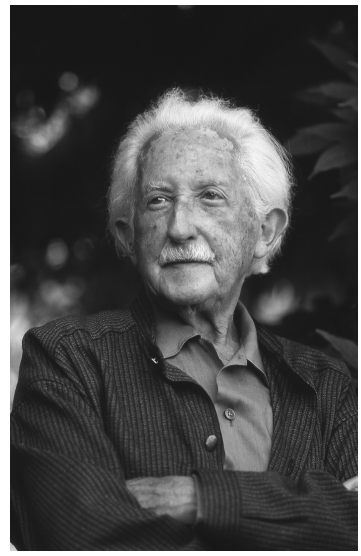
Approximate Age	Freud's Stages of Psychosexual Development	Major Characteristics of Freud's Stages	Erikson's Stages of Psychosocial Development	Positive and Negative Outcomes of Erikson's Stages
Birth to 12–18 months	Oral	Interest in oral gratification from sucking, eating, mouthing, biting	Trust versus mistrust	*Positive:* Feelings of trust from environmental support *Negative:* Fear and concern regarding others
12–18 months to 3 years	Anal	Gratification from expelling and withholding feces; coming to terms with society's controls relating to toilet training	Autonomy versus shame and doubt	*Positive:* Self-sufficiency if exploration is encouraged *Negative:* Doubts about self, lack of independence
3 to 5–6 years	Phallic	Interest in the genitals; coming to terms with Oedipal conflict, leading to identification with same-sex parent	Initiative versus guilt	*Positive:* Discovery of ways to initiate actions *Negative:* Guilt from actions and thoughts
5–6 years to adolescence	Latency	Sexual concerns largely unimportant	Industry versus inferiority	*Positive:* Development of sense of competence *Negative:* Feelings of inferiority, no sense of mastery
Adolescence to adulthood (Freud) Adolescence (Erikson)	Genital	Reemergence of sexual interests and establishment of mature sexual relationships	Identity versus role diffusion	*Positive:* Awareness of uniqueness of self, knowledge of role to be followed *Negative:* Inability to identify appropriate roles in life
Early adulthood (Erikson)			Intimacy versus isolation	*Positive:* Development of loving, sexual relationships and close friendships *Negative:* Fear of relationships with others
Middle adulthood (Erikson)			Generativity versus stagnation	*Positive:* Sense of contribution to continuity of life *Negative:* Trivialization of one's activities
Late adulthood (Erikson)			Ego integrity versus despair	*Positive:* Sense of unity in life's accomplishments *Negative:* Regret over lost opportunities of life

According to Freud, if children are unable to gratify themselves sufficiently during a particular stage—or conversely, if they receive too much gratification—fixation may occur. *Fixation* is behavior reflecting a previous stage of development due to an unresolved conflict. For instance, fixation at the oral stage might produce an adult who is unusually absorbed in oral activities—eating, talking, or chewing gum.

ERIKSON'S PSYCHOSOCIAL THEORY. Psychoanalyst Erik Erikson, who lived from 1902 to 1994, provided an alternative psychodynamic view in his theory of psychosocial development, which emphasizes our social interaction with other people. In Erikson's view, both society and culture challenge and shape us. **Psychosocial development** encompasses changes in our interactions with and understandings of one another as well as in our knowledge and understanding of ourselves as members of society (Erikson, 1963; Knight, 2017; Thompson, 2021).

Erikson's theory suggests that developmental change occurs throughout our lives in eight distinct stages (see Table 1-3). The stages emerge in a fixed pattern and are similar for all people. Erikson argued that each stage presents a crisis or conflict that the individual must resolve. Although no crisis is ever fully resolved, making life increasingly complicated, the individual must at least address the crisis of each stage sufficiently to deal with demands made during the next stage of development.

Unlike Freud, who regarded development as relatively complete by adolescence, Erikson suggested that growth and change continue throughout the life span. For instance, as we'll discuss further in Chapter 16, Erikson suggested that during middle adulthood, people pass through the *generativity versus stagnation stage*, in which their contributions to family, community, and society can produce either positive feelings about the continuity of life or a sense of stagnation and disappointment about what they are passing on to future generations (de St. Aubin et al., 2004).



Jon Erikson/Science Source

Erik Erikson.

psychosocial development the approach that encompasses changes in our interactions with and understandings of one another, as well as in our knowledge and understanding of ourselves as members of society

ASSESSING THE PSYCHODYNAMIC PERSPECTIVE. It is hard for us to grasp the full significance of psychodynamic theories represented by Freud's psychoanalytic theory and Erikson's theory of psychosocial development. Freud's introduction of the notion that unconscious influences affect behavior was a monumental accomplishment, and that it seems at all reasonable to us shows how extensively the idea of the unconscious has pervaded thinking in Western cultures. In fact, work by contemporary researchers studying memory and learning suggests that we carry with us memories—of which we are not consciously aware—that have a significant impact on our behavior.

However, many of the most basic principles of Freud's psychoanalytic theory have been called into question because they have not been validated by subsequent research. In particular, the notion that people pass through various stages in childhood that determine their adult personalities has little definitive research support. In addition, because much of Freud's theory was based on a limited population of upper-middle-class Austrians living during a strict, puritanical era, its application to broad, multicultural populations is questionable. Finally, because Freud's theory focuses primarily on male development, it has been criticized as sexist and may be interpreted as devaluing women. For such reasons, many developmentalists question Freud's theory (O'Neil & Denke, 2016; Jacobs, 2019).

Erikson's view that development continues throughout the life span is highly important—and has received considerable support. However, the theory also has its drawbacks. Like Freud's theory, it focuses more on men's than women's development. It is also vague in some respects, making it difficult for researchers to test rigorously. And, as is the case with psychodynamic theories in general, it is difficult to make definitive predictions about a given individual's behavior using the theory. In sum, then, the psychodynamic perspective provides good descriptions of past behavior but imprecise predictions of future behavior (de St. Aubin et al., 2004; Balsam, 2013).

The Behavioral Perspective: Focusing on Observable Behavior

LO 1.6 Describe how the behavioral perspective explains lifespan development.

When Elissa Sheehan was 3, a large brown dog bit her, and she needed dozens of stitches and several operations. From the time she was bitten, she broke into a sweat whenever she saw a dog and, in fact, never enjoyed being around any pet.

To a lifespan development specialist using the behavioral perspective, the explanation for Elissa's behavior is straightforward: She has a learned fear of dogs. Rather than looking inside the organism at unconscious processes, the **behavioral perspective** suggests that the keys to understanding development are observable behavior and outside stimuli in the environment. If we know the stimuli, we can predict the behavior. In this respect, the behavioral perspective reflects the view that nurture is more important to development than nature.

behavioral perspective
the approach suggesting that the keys to understanding development are observable behavior and outside stimuli in the environment

Behavioral theories reject the notion that people universally pass through a series of stages. Instead, people are assumed to be affected by the environmental stimuli to which they happen to be exposed. Developmental patterns, then, are personal, reflecting a particular set of environmental stimuli, and behavior is the result of continuing exposure to specific factors in the environment. Furthermore, developmental change is viewed in quantitative, rather than qualitative, terms. For instance, behavioral theories hold that advances in problem-solving capabilities as children age are largely a result of greater mental *capacities* rather than changes in the *kind* of thinking that children are able to bring to bear on a problem.

Archive Photos/Getty Images

John B. Watson.

CLASSICAL CONDITIONING: STIMULUS SUBSTITUTION.

> *Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant-chief, and yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities. (Watson, J. B. [1925]. Behaviorism. Norton.)*

With these words, John B. Watson, one of the first American psychologists to advocate a behavioral approach, summed up the behavioral perspective. Watson, who lived from 1878 to 1958, believed strongly that we could gain a full understanding of development by carefully studying the stimuli that composed the environment. In fact, he argued that by effectively controlling a person's environment, it was possible to produce virtually any behavior.

As we'll consider further in Chapter 5, **classical conditioning** occurs when an organism learns to respond in a particular way to a neutral stimulus that normally does not evoke that type of response. For instance, if a dog is repeatedly exposed to the pairing of the sound of a bell and the presentation of meat, it may learn to react to the bell alone in the same way it reacts to the meat—by salivating and wagging its tail with excitement. Dogs don't typically respond to bells in this way; the behavior is a result of conditioning, a form of learning in which the response associated with one stimulus (food) comes to be connected to another—in this case, the bell.

classical conditioning
a type of learning in which an organism responds in a particular way to a neutral stimulus that normally does not bring about that type of response

The same process of classical conditioning explains how we learn emotional responses. In the case of dog-bite victim Elissa Sheehan, for instance, Watson would say that one stimulus has been substituted for another: Elissa's unpleasant experience with a particular dog (the initial stimulus) has been transferred to other dogs and to pets in general.

OPERANT CONDITIONING. In addition to classical conditioning, other types of learning also derive from the behavioral perspective. The learning approach that probably has had the greatest influence is operant conditioning. **Operant conditioning** is a form of learning in which a voluntary response is strengthened or weakened by its association with positive or negative consequences. It differs from classical

operant conditioning
a form of learning in which a voluntary response is strengthened or weakened by its association with positive or negative consequences

conditioning in that the response being conditioned is voluntary and purposeful rather than automatic (such as salivating).

In operant conditioning, formulated and championed by psychologist B. F. Skinner, who lived from 1904 to 1990, individuals learn to act deliberately on their environment to bring about desired consequences (Skinner, 1975). In a sense, then, people *operate* on their environment to bring about a desired state of affairs.

Whether children and adults will seek to repeat a behavior depends on whether it is followed by reinforcement. *Reinforcement* is the process by which a stimulus is provided that increases the probability that a preceding behavior will be repeated. Hence, a student is apt to work harder in school if they receive good grades; workers are likely to labor harder at their jobs if their efforts are tied to pay increases; and people are more apt to buy lottery tickets if they are reinforced by winning occasionally. In addition, *punishment*, the introduction of an unpleasant or a painful stimulus or the removal of a desirable stimulus, will decrease the probability that a preceding behavior will occur in the future.

Behavior that is reinforced, then, is more likely to be repeated in the future, and behavior that receives no reinforcement or is punished is likely to be discontinued, or in the language of operant conditioning, *extinguished*. Principles of operant conditioning are used in **behavior modification**, a formal technique for promoting the frequency of desirable behaviors and decreasing the incidence of unwanted ones. Behavior modification has been used in a variety of situations, ranging from teaching severely intellectually disabled people the rudiments of language to helping people stick to diets (Wirth et al., 2014; Miltenberger, 2016; Isaksson et al., 2021).

behavior modification
a formal technique for promoting the frequency of desirable behaviors and decreasing the incidence of unwanted ones

SOCIAL-COGNITIVE LEARNING THEORY: LEARNING THROUGH IMITATION. A 5-year-old boy seriously injured his 22-month-old cousin while imitating a violent wrestling move he had seen on television. Although the infant sustained spinal cord injuries, he improved and was discharged 5 weeks after his hospital admission (Reuters Health eLine, 2002; Ray & Heyes, 2011).

Cause and effect? We can't know for sure, but it certainly seems possible, especially looking at the situation from the perspective of social-cognitive learning theory. According to developmental psychologist Albert Bandura and colleagues, a significant amount of learning is explained by **social-cognitive learning theory**, an approach that emphasizes learning by observing the behavior of another person, called a *model* (Bandura, 2002, 2019).

social-cognitive learning theory
learning by observing the behavior of another person, called a *model*

According to social-cognitive learning theory, behavior is learned primarily through observation and not through trial and error, as it is with operant conditioning. We don't need to experience the consequences of a behavior ourselves to learn it. Social-cognitive learning theory holds that when we see the behavior of a model being rewarded, we are likely to imitate that behavior.

For instance, in one classic experiment, children who were afraid of dogs were exposed to a model, nicknamed the "Fearless Peer," who was seen playing happily with a dog. After exposure, the children who previously had been afraid were more likely to approach a strange dog than children who had not seen the model (Bandura et al., 1967; Bandura, 2019).

Bandura suggests that social-cognitive learning proceeds in four steps (Bandura, 1986). First, an observer must pay attention and perceive the most critical features of a model's behavior. Second, the observer must successfully recall the behavior. Third, the observer must reproduce the behavior accurately. Finally, the observer must be motivated to learn and carry out the behavior.

From *a Social Worker's* Perspective

How do the concepts of social learning and modeling relate to the mass media, and how might exposure to mass media influence a child's family life?

India Picture/Shutterstock

What form of learning is being demonstrated in this picture?

ASSESSING THE BEHAVIORAL PERSPECTIVE. Research using the behavioral perspective has made significant contributions, ranging from techniques for educating children with severe intellectual disabilities to identifying procedures for curbing aggression. At the same time, controversies surround the behavioral perspective. For example, although they are part of the same general behavioral perspective, classical and operant conditioning and social learning theory diverge in basic ways. Both classical and operant conditioning present learning in terms of external stimuli and responses, in which the only important factors are the observable features of the environment. In such an analysis, people and other organisms are like an opaque box: Nothing that occurs inside the box is understood—nor much cared about, for that matter.

To social learning theorists, such an analysis is an oversimplification. They argue that what makes people different from rats and pigeons is the occurrence of mental activity in the form of thoughts and expectations. A full understanding of people's development, they maintain, cannot occur without moving beyond external stimuli and responses.

In many ways, social learning theory has come to predominate in recent decades over classical and operant conditioning theories. In fact, another perspective that focuses explicitly on internal mental activity has become enormously influential. This is the cognitive approach, which we consider next.

The Cognitive Perspective: Examining the Roots of Understanding

LO 1.7 Describe how the cognitive perspective explains lifespan development.

When 3-year-old Jake is asked why it sometimes rains, he answers "so the flowers can grow." When his 11-year-old sister Lila is asked the same question, she responds "because of evaporation from the surface of the earth." And when their cousin Ajima, who is studying meteorology in graduate school, considers the same question, her extended answer includes a discussion of cumulonimbus clouds, the Coriolis effect, and synoptic charts.

To a developmental theorist using the cognitive perspective, the difference in the sophistication of the answers is evidence of a different degree of knowledge and understanding, or cognition. The **cognitive perspective** focuses on the processes that allow people to know, understand, and think about the world.

cognitive perspective
the approach that focuses on the processes that allow people to know, understand, and think about the world

The cognitive perspective emphasizes how people internally represent and think about the world. By using this perspective, developmental researchers hope to understand how children and adults process information and how their ways of thinking and understanding affect their behavior. They also seek to learn how cognitive abilities change as people develop, the degree to which cognitive development represents quantitative and qualitative growth in intellectual abilities, and how different cognitive abilities are related to one another.

PIAGET'S THEORY OF COGNITIVE DEVELOPMENT. No single person has had a greater impact on the study of cognitive development than Jean Piaget, who lived from 1896 to 1980. A Swiss psychologist, Piaget proposed that all people pass in a fixed sequence through a series of universal stages of cognitive development. He suggested that not only does the quantity of information increase in each stage, but the quality of knowledge and understanding alao changes. His focus was on the change in cognition that occurs as children move from one stage to the next (Piaget, 1962, 1983).

Although we'll consider Piaget's theory in detail beginning in Chapter 5, we can get a broad sense of it now. Piaget suggested that human thinking is arranged into *schemes*, that is, organized mental patterns that represent behaviors and actions. In infants, such schemes represent concrete behavior—a scheme for sucking, for reaching, and for each separate behavior. In older children, the schemes become more sophisticated and abstract, such as the set of skills involved in riding a bike or playing an interactive video game. Schemes are like intellectual computer software programs that direct and determine how data from the world are looked at and handled (Arnold, 2018; Wuth et al., 2021).

Piaget suggests that the growth in children's understanding of the world can be explained by the two basic principles of assimilation and accommodation. *Assimilation* is the process through which people understand an experience in terms of their current stage of cognitive development and way of thinking. Assimilation occurs when people use their current ways of thinking about and understanding the world to perceive and understand a new experience. In contrast, *accommodation* refers to changes in existing ways of thinking in response to encounters with new stimuli or events. Assimilation and accommodation work in tandem to bring about cognitive development.

Assessing Piaget's Theory. Piaget has profoundly influenced our understanding of cognitive development and is one of the towering figures in lifespan development. He provided masterful descriptions of how intellectual growth proceeds during childhood—descriptions that have stood the test of literally thousands of investigations. By and large, then, Piaget's broad view of the sequence of cognitive development is accurate.

However, the specifics of the theory, particularly in terms of change in cognitive capabilities over time, have been called into question. For instance, some cognitive skills clearly emerge earlier than Piaget suggested. Furthermore, the universality of Piaget's stages has been disputed. A growing amount of evidence suggests that the emergence of particular cognitive skills occurs according to a different timetable in non-Western cultures. And in every culture, some people never seem to reach Piaget's highest level of cognitive sophistication: formal, logical thought (De Jesus-Zayas et al., 2012; Siegler, 2016; Babakr et al., 2019).

Ultimately, the greatest criticism leveled at the Piagetian perspective is that cognitive development is not necessarily as discontinuous as Piaget's stage theory suggests. Remember that Piaget argued that growth proceeds in four distinct stages in which the quality of cognition differs from one stage to the next. However, many developmental researchers argue that growth is considerably more continuous. These critics have suggested an alternative perspective, known as the information processing approach, which focuses on the processes that underlie learning, memory, and thinking throughout the life span.

INFORMATION PROCESSING APPROACHES. Information processing approaches have become an important alternative to Piagetian approaches. **Information processing approaches** to cognitive development seek to identify the ways individuals take in, use, and store information.

information processing approaches
models that seek to identify the ways individuals take in, use, and store information

Information processing approaches grew out of developments in the electronic processing of information, particularly as carried out by computers. They assume that even complex behavior such as learning, remembering, categorizing, and thinking can be broken down into a series of individual, specific steps.

Like computers, children are assumed by information processing approaches to have limited capacity for processing information. As they develop, however, they employ increasingly sophisticated strategies that allow them to process information more efficiently.

In stark contrast to Piaget's view that thinking undergoes qualitative advances as children age, information processing approaches assume that development is marked more by quantitative advances. Our capacity to handle information changes with age, as does our processing speed and efficiency. Furthermore, information processing approaches suggest that as we age, we are better able to control the nature of processing and that we can change the strategies we use to process information.

An information processing approach that builds on Piaget's research is known as neo-Piagetian theory. In contrast to Piaget's original work, which viewed cognition as a single system of increasingly sophisticated general cognitive abilities, *neo-Piagetian theory* considers cognition as being made up of different types of individual skills. Using the terminology of information processing approaches, neo-Piagetian theory suggests that cognitive development proceeds quickly in certain areas and more slowly in others. For example, reading ability and the skills needed to recall stories may progress sooner than the sorts of abstract

computational abilities used in algebra or trigonometry. Furthermore, neo-Piagetian theorists believe that experience plays a greater role in advancing cognitive development than traditional Piagetian approaches claim (Loewen, 2006; Barrouillet & Gaillard, 2011).

Assessing Information Processing Approaches. As we'll see in future chapters, information processing approaches have become a central part of our understanding of development. At the same time, they do not offer a complete explanation for behavior. For example, information processing approaches have paid little attention to behavior such as creativity, in which the most profound ideas often are developed in a seemingly nonlogical, nonlinear manner. In addition, they do not take into account the social context in which development takes place. That's one of the reasons that theories emphasizing the social and cultural aspects of development have become increasingly popular—as we'll discuss next.

cognitive neuroscience approaches
approaches that examine cognitive development through the lens of brain processes

COGNITIVE NEUROSCIENCE APPROACHES. One of the most recent additions to the array of approaches taken by lifespan developmentalists, **cognitive neuroscience approaches** look at cognitive development through the lens of brain processes. Like other cognitive perspectives, cognitive neuroscience approaches consider internal mental processes, but they focus specifically on the neurological activity that underlies thinking, problem solving, and other cognitive behavior.

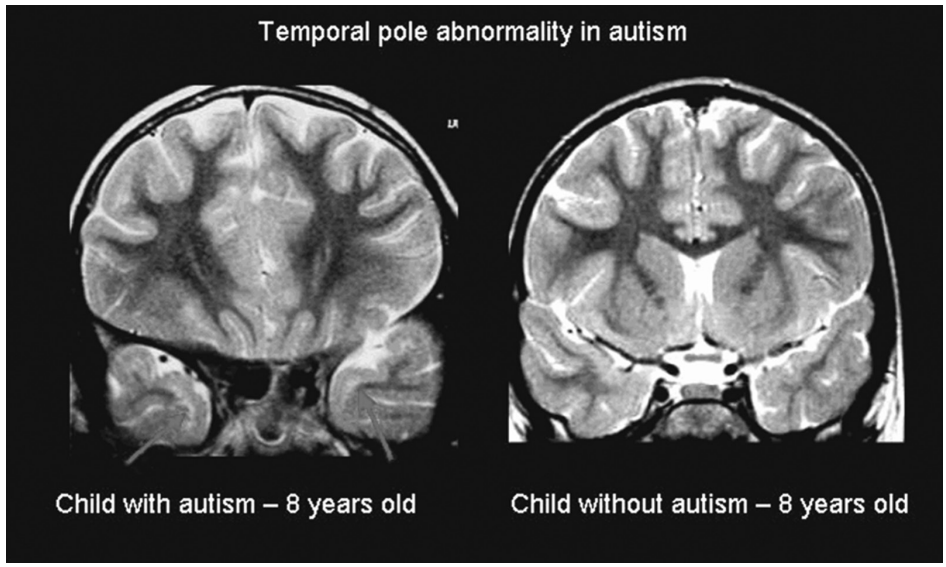
Cognitive neuroscientists seek to identify actual locations and functions within the brain that are related to different types of cognitive activity rather than simply assuming that there are hypothetical or theoretical cognitive structures related to thinking. For example, using sophisticated brain scanning techniques, cognitive neuroscientists have demonstrated that thinking about the meaning of a word activates different areas of the brain than thinking about how the word sounds when spoken.

The work of cognitive neuroscientists is also providing clues to the cause of *autism spectrum disorder*, a developmental disability that can produce profound language deficits and self-injurious behavior in young children. For example, neuroscientists have found that the brains of children with the disorder sometimes show explosive, dramatic growth in the first year of life, making their heads significantly larger than those of children without the disorder. Furthermore, brain scans show structural differences in the brains of children (see Figure 1-2). By identifying children with the disorder while they are young,

Figure 1-2 The Brain and Children with Autism

Researchers have found abnormalities in the temporal lobe of the brain in some children diagnosed with autism spectrum disorder.

(**Source:** Boddaert N., et al. [2009]. MRI Findings in 77 Children with Non-Syndromic Autistic Disorder, *PLoS ONE*. 2009; 4[2]: e4415.)



health care practitioners can provide crucial early intervention (Grant, 2017; Bejarano-Martín, 2019; Weichwald & Peters, 2021).

Cognitive neuroscience approaches are also on the forefront of cutting-edge research that has identified specific genes associated with disorders ranging from physical problems such as breast cancer to psychological disorders such as schizophrenia. Identifying the genes that make one vulnerable to such disorders is the first step in genetic engineering in which gene therapy can reduce or even prevent the disorder from occurring (Rodnitzky, 2012; Wylie et al., 2020; Madan, 2021).

Assessing Cognitive Neuroscience Approaches. Cognitive neuroscience approaches represent a new frontier in child and adolescent development. Using sophisticated measurement techniques that have been developed only in the past few years, cognitive neuroscientists are able to peer into the inner functioning of the brain. Advances in our understanding of genetics also has opened a new window into both normal and abnormal development and has suggested a variety of treatments for abnormalities.

Critics of the cognitive neuroscience approach have suggested that it sometimes provides a better *description* than *explanation* of developmental phenomena. For instance, the finding that children with autism spectrum disorder have larger brains than those without the disorder does not explain why their brains became larger—that's a question that remains to be answered. Still, such work not only offers important clues to appropriate treatments but ultimately can also lead to a full understanding of a range of developmental phenomena.

The Humanistic Perspective: Concentrating on the Unique Qualities of Human Beings

LO 1.8 Describe how the humanistic perspective explains lifespan development.

The unique qualities of humans are the central focus of the humanistic perspective, the fourth of the major theories used by lifespan developmentalists. Rejecting the notion that our behavior is largely determined by unconscious processes, by learning from our environment, or by rational cognitive processing, the **humanistic perspective** contends that people have a natural capacity to make decisions about their lives and to control their behavior. According to this approach, each individual has the ability and motivation to reach more advanced levels of maturity, and people naturally seek to reach their full potential (Brown et al., 2019).

humanistic perspective the theory contending that people have a natural capacity to make decisions about their lives and control their behavior

The humanistic perspective emphasizes *free will*, the ability of humans to make choices and come to decisions about their lives. Instead of relying on societal standards, then, people are assumed to be motivated to make their own decisions about what they do with their lives.

Carl Rogers, who lived from 1902 to 1987, one of the major proponents of the humanistic perspective, suggested that all people have a need for positive regard that results from an underlying wish to be loved and respected. Because it is other people who provide this positive regard, we become dependent on them. Consequently, our view of ourselves and our self-worth is a reflection of how we think others view us (Rogers, 1971; Malchiodi, 2012; Joseph, 2020).

Rogers, along with another key figure in the humanistic perspective, Abraham Maslow, who lived from 1908 to 1970, suggests that self-actualization is a primary goal in life. *Self-actualization* is a state of self-fulfillment in which people achieve their highest potential in their own unique way. Although the concept initially was deemed to apply to only a few select famous people, such as Eleanor Roosevelt, Abraham Lincoln, and Albert Einstein, later theorists expanded the concept to apply to any person who realizes their own potential and possibilities (Maslow, 1970; Malchiodi, 2012; Kaufman, 2021).

ASSESSING THE HUMANISTIC PERSPECTIVE. Despite its emphasis on important and unique human qualities, the humanistic perspective has not had a major impact on the field of lifespan development. Its lack of influence is primarily due to its inability to identify any sort of broad developmental change that is the result of increasing age or experience. Still,

some of the concepts drawn from the humanistic perspective, such as self-actualization, have helped describe important aspects of human behavior and are widely discussed in areas ranging from health care to business (Elkins, 2009; Beitel et al., 2014; Joseph, 2020).

The Contextual Perspective: Taking a Broad Approach to Development

LO 1.9 **Describe how the contextual perspective explains lifespan development.**

Although lifespan developmentalists often consider the course of development separately in terms of physical, cognitive, personality, and social factors, such a categorization has one serious drawback: In the real world, none of these broad influences occurs in isolation from any other. Instead, there is a constant, ongoing interaction between the different types of influence.

contextual perspective
the theory that considers the relationship between individuals and their physical, cognitive, personality, and social worlds

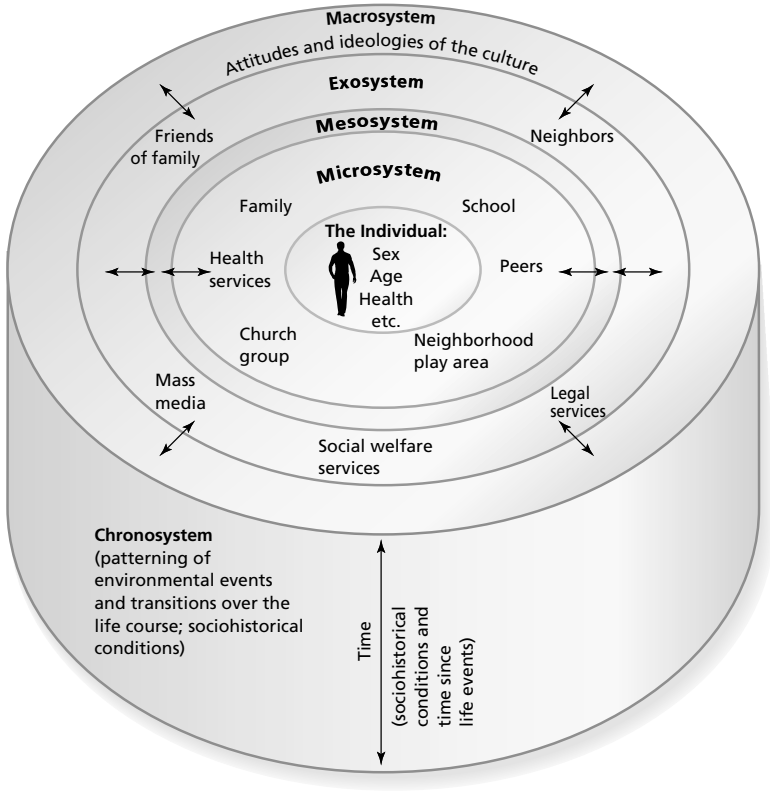
The **contextual perspective** considers the relationship between individuals and their physical, cognitive, personality, and social worlds. It suggests that a person's unique development cannot be properly viewed without seeing how that person is enmeshed within a rich social and cultural context. We'll consider two major theories that fall under this category: Bronfenbrenner's bioecological approach and Vygotsky's sociocultural theory.

THE BIOECOLOGICAL APPROACH TO DEVELOPMENT. In acknowledging the problem with traditional approaches to lifespan development, psychologist Urie Bronfenbrenner, who lived from 1917 to 2005, proposed an alternative perspective, called the bioecological approach (2000, 2002). The **bioecological approach** suggests that five levels of the environment simultaneously influence individuals. Bronfenbrenner noted that we cannot fully understand development without considering how a person is influenced by each of these levels (illustrated in Figure 1-3).

bioecological approach
the approach suggesting that different levels of the environment simultaneously influence individuals

Figure 1-3 Bronfenbrenner's Approach to Development

Urie Bronfenbrenner's bioecological approach to development offers five levels of the environment that simultaneously influence individuals: the macrosystem, exosystem, mesosystem, microsystem, and chronosystem.



- The *microsystem* is the everyday, immediate environment in which children lead their daily lives. Homes, caregivers, friends, and teachers all are influences that are part of the microsystem. But the child is not just a passive recipient of these influences. Instead, children actively help construct the microsystem, shaping the immediate world in which they live. The microsystem is the level at which most traditional work in child development has been directed.
- The *mesosystem* provides connections between the various aspects of the microsystem. Like links in a chain, the mesosystem binds children to parents, students to teachers, employees to bosses, and friends to friends. It acknowledges the direct and indirect influences that bind us to one another, such as those that affect a parent who has a bad day at the office and then is short-tempered with their child at home.
- The *exosystem* represents broader influences, encompassing societal institutions such as local government, the community, schools, places of worship, and the local media. Each of these larger institutions of society can have an immediate, and major, impact on personal development, and each affects how the microsystem and mesosystem operate. For example, the quality of a school will affect a child's cognitive development and potentially can have long-term consequences.
- The *macrosystem* represents the larger cultural influences on an individual. Society in general, types of governments, religious and political value systems, and other broad, encompassing factors are parts of the macrosystem. For example, the value a culture or society places on education or the family will affect the values of the people who live in that society. Children are part of a broader culture (such as Western culture) and are influenced by their membership in a particular subculture (for instance, being part of the Mexican American subculture).
- Finally, the *chronosystem* underlies each of the previous systems. It involves the way the passage of time, including historical events (such as the COVID-19 pandemic) and more gradual historical changes (such as changes in the number of women who work outside of the home), affect children's development.

The bioecological approach emphasizes the *interconnectedness of the influences on development.* Because the various levels are related to one another, a change in one part of the system affects other parts of the system. For instance, a parent's loss of a job (involving the mesosystem) has an impact on a child's microsystem.

Conversely, changes on one environmental level may make little difference if other levels are not also changed. For instance, improving the school environment may have a negligible effect on academic performance if children receive little support for academic success at home. Similarly, the bioecological approach illustrates that the influences among different family members are multidirectional. Parents don't just influence their child's behavior; children also influence their parents' behavior.

Finally, the bioecological approach stresses the importance of broad cultural factors that affect development. Researchers in lifespan development increasingly look at how membership in cultural and subcultural groups influences behavior.

Consider, for instance, whether you agree that children should be taught that their classmates' assistance is indispensable to getting good grades in school, that they should definitely plan to continue their parents' businesses, or that children should follow their parents' advice in determining their career plans. If you have been raised in the most widespread North American culture, you would likely disagree with all three statements because they violate the premises of *individualism*, the dominant Western philosophy that emphasizes personal identity, uniqueness, freedom, and the worth of the individual.

By contrast, if you were raised in a traditional Chinese or Japanese culture, your agreement with the three statements would be considerably more likely. The reason? The statements reflect the value orientation known as *collectivism*—the notion that the well-being of the group is more important than that of the individual. People raised in

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Pavel L Photo and Video/Shutterstock

The bioecological approach to development focuses on the vast differences in environments in which children develop.

collectivistic cultures tend to emphasize the welfare of the groups to which they belong, sometimes even at the expense of their own personal well-being.

The individualism–collectivism spectrum is one of several dimensions along which cultures differ. Similarly, the roles played by men and women also vary across cultures in significant ways. Such broad cultural values play an important role in shaping the ways people view the world and behave (Cheung et al., 2016; Sparrow, 2016; Lu, Jin et al., 2021).

Assessing the Bioecological Approach. Although Bronfenbrenner considered biological influences as an important component of the bioecological approach, ecological influences are central to the theory. Some critics argue that the perspective pays insufficient attention to biological factors. Still, the bioecological approach is of considerable importance to lifespan development, suggesting as it does the multiple levels at which the environment affects development (Kiyala, 2021).

VYGOTSKY'S SOCIOCULTURAL THEORY. To Russian developmentalist Lev Semenovich Vygotsky, who lived from 1896 to 1934, a full understanding of development was impossible without taking into account the culture in which people develop. Vygotsky's **sociocultural theory** emphasizes how cognitive development proceeds as a result of social interactions between members of a culture (Vygotsky, 1926/1997; Fleer, et al., 2017; Lemke, 2020).

sociocultural theory
the approach that emphasizes how cognitive development proceeds as a result of social interactions between members of a culture

Vygotsky argued that children's understanding of the world is acquired through their problem-solving interactions with adults and other children. As children play and cooperate with others, they learn what is important in their society and, at the same time, advance cognitively in their understanding of the world. Consequently, to understand the course of development, we must consider what is meaningful to members of a given culture.

Ami Parikh/Shutterstock

According to Vygotsky, children can develop cognitively in their understanding of the world and learn what is important in society through play and cooperation with others.

More than most other theories, sociocultural theory emphasizes that development is a *reciprocal transaction* between the people in a child's environment and the child. Vygotsky believed that people and settings influence the child, who in turn influences the people and settings. This pattern continues in an endless loop, with children being both recipients of socialization influences and sources of influence. For example, a child raised with their extended family nearby will grow up with a different sense of family life than a child whose relatives live a considerable distance away. Those relatives, too, are affected by that situation and that child, depending on how close and frequent their contact is with the child.

Theorists who built on Vygotsky's work have used the example of *scaffolds*, the temporary platforms used by construction workers when building a structure, to describe how children learn. Scaffolding is the temporary support that teachers, parents, and others provide children as they are learning a task. As children become increasingly competent and become skilled at a task, the scaffolding can be withdrawn, allowing children to carry out the task on their own (Lowe et al., 2013; Peralta et al., 2013; Dahl et al., 2017).

Assessing Vygotsky's Theory. Sociocultural theory has become increasingly influential in the decades since Vygotsky's death. The reason is the growing acknowledgment of the central importance of cultural factors in development. Children do not develop in a cultural vacuum. Instead, their attention is directed by society to certain areas, and as a consequence, they develop particular kinds of skills that are an outcome of their cultural environment. Vygotsky was one of the first developmentalists to recognize and acknowledge the importance of culture, and—as today's society becomes increasingly multicultural—sociocultural theory is helping us to understand the rich and varied influences that shape development (Frie, 2014; van der Veer & Yasnitsky, 2016; Lemke, 2020).

Sociocultural theory is not without its critics, however. Some suggest that Vygotsky's strong emphasis on the role of culture and social experience led him to ignore the effects of biological factors on development. In addition, his perspective seems to minimize the role that individuals can play in shaping their own environment.

Evolutionary Perspectives: Our Ancestors' Contributions to Behavior

LO 1.10 Describe how the evolutionary perspective explains lifespan development.

One increasingly influential approach is the evolutionary perspective, the sixth and final developmental perspective that we will consider. The **evolutionary perspective** seeks to identify behavior that is the result of our genetic inheritance from our ancestors (Tomasello, 2011; Shackleford, 2021).

evolutionary perspective the theory that seeks to identify behavior that is a result of our genetic inheritance from our ancestors

Evolutionary approaches have grown out of the groundbreaking work of Charles Darwin (1809–1882). In his book, *On the Origin of Species* (1859), Darwin argued that a process of natural selection creates traits in a species that are adaptive to its environment. Using Darwin's arguments, evolutionary approaches contend that our genetic inheritance determines not only such physical traits as skin and eye color but also certain personality traits and social behaviors. For instance, some evolutionary developmentalists suggest that traits such as shyness and jealousy are produced in part by genetic causes, presumably because they helped increase the survival rates of humans' ancient relatives (Buss, 2012; Geary & Berch, 2016; Hassan et al., 2021).

The evolutionary perspective draws heavily on the field of *ethology*, which examines the ways in which our biological makeup influences our behavior. A primary proponent of ethology was Konrad Lorenz, who lived from 1903 to 1989 and discovered that newborn geese are genetically preprogrammed to become attached to the first moving object they see after birth. His work, which demonstrated the importance of biological determinants in influencing behavior patterns, ultimately led developmentalists to consider the ways in which human behavior might reflect inborn genetic patterns.

Nina Leen/The LIFE Picture Collection/Shutterstock

Konrad Lorenz, seen here with geese that from their birth followed him, considered the ways in which behavior reflects inborn genetic patterns.

As we'll consider further in Chapter 2, the evolutionary perspective encompasses one of the

fastest-growing areas within the field of lifespan development: behavioral genetics. *Behavioral genetics* studies the effects of heredity on behavior. Behavioral geneticists seek to understand how we might inherit certain behavioral traits and how the environment influences whether we actually display such traits. It also considers how genetic factors may produce psychological disorders such as schizophrenia (Rembis, 2009; Plomin et al., 2016; Kendler, 2020).

ASSESSING THE EVOLUTIONARY PERSPECTIVE. There is little argument among lifespan developmentalists that Darwin's evolutionary theory provides an accurate description of basic genetic processes, and the evolutionary perspective is increasingly visible in the field of lifespan development. However, applications of the evolutionary perspective have been subjected to considerable criticism.

Some developmentalists are concerned that because of its focus on genetic and biological aspects of behavior, the evolutionary perspective pays insufficient attention to the environmental and social factors involved in producing children's and adults' behavior. Other critics argue that there is no good way to experimentally test theories derived from the evolutionary approach because they all happened so long ago. For example, it is one thing to say that jealousy helped individuals to survive more effectively and another thing to prove it. Still, the evolutionary approach has stimulated a significant amount of research on how our biological inheritance at least partially influences our traits and behaviors (Baptista et al., 2008; Del Giudice, 2015; Barbaro et al., 2017).

Why "Which Approach Is Right?" Is the Wrong Question

LO 1.11 Discuss the value of applying multiple perspectives to lifespan development.

We have considered the six major perspectives used in lifespan development—psychodynamic, behavioral, cognitive, humanistic, contextual, and evolutionary. These perspectives are summarized in Table 1-4 and are applied to the case of a young adult who is overweight. It would be natural to wonder which of the six perspectives provides the most accurate account of human development.

Table 1-4 Major Perspectives on Lifespan Development

Perspective	Key Ideas About Human Behavior and Development	Major Proponents	Example
Psychodynamic	Behavior throughout life is motivated by inner, unconscious forces, stemming from childhood, over which we have little control.	Sigmund Freud, Erik Erikson	This view might suggest that a young adult who is overweight has a fixation in the oral stage of development.
Behavioral	Development can be understood through studying observable behavior and environmental stimuli.	John B. Watson, B. F. Skinner, Albert Bandura	In this perspective, a young adult who is overweight might be seen as not being rewarded for good nutritional and exercise habits.
Cognitive	Emphasis on how changes or growth in the ways people know, understand, and think about the world affect behavior.	Jean Piaget	This view might suggest that a young adult who is overweight hasn't learned effective ways to stay at a healthy weight and doesn't value good nutrition.
Humanistic	Behavior is chosen through free will and motivated by our natural capacity to strive to reach our full potential.	Carl Rogers, Abraham Maslow	In this view, a young adult who is overweight may eventually choose to seek an optimal weight as part of an overall pattern of individual growth.
Contextual	Development should be viewed in terms of the interrelationship of a person's physical, cognitive, personality, and social worlds.	Urie Bronfenbrenner, Lev Vygotsky	In this perspective, being overweight is caused by a number of interrelated factors in that person's physical, cognitive, personality, and social worlds.
Evolutionary	Behavior is the result of genetic inheritance from our ancestors; traits and behavior that are adaptive for promoting the survival of our species have been inherited through natural selection.	Influenced by early work of Charles Darwin, Konrad Lorenz	This view might suggest that a young adult might have a genetic tendency toward obesity because extra fat helped their ancestors to survive in times of famine.

For several reasons, this question is not entirely appropriate. For one thing, each perspective emphasizes somewhat different aspects of development. For instance, the psychodynamic approach emphasizes emotions, motivational conflicts, and unconscious determinants of behavior. In contrast, behavioral perspectives emphasize overt behavior, paying far more attention to what people *do* than to what goes on inside their heads, which is deemed largely irrelevant. The cognitive and humanistic perspectives take quite the opposite tack, looking more at what people *think* than at what they do. Finally, the evolutionary perspective focuses on how inherited biological factors underlie development.

For example, a developmentalist using the psychodynamic approach might consider how the COVID-19 pandemic might affect children, unconsciously, for their entire life span. A cognitive approach might focus on how children perceived and came to interpret and understand the pandemic, while a contextual approach might consider what personality and social factors led to government leaders' responses to the pandemic.

Clearly, each perspective is based on its own premises and focuses on different aspects of development. Furthermore, the same developmental phenomenon can be looked at from a number of perspectives simultaneously. In fact, some lifespan developmentalists use an *eclectic* approach, drawing on several perspectives simultaneously.

We can think of the different perspectives as analogous to a set of maps of the same general geographical area. One map may contain detailed depictions of roads; another map may show geographical features; another may show political subdivisions, such as cities, towns, and counties; and still another may highlight particular points of interest, such as scenic areas and historical landmarks. Each of the maps is accurate, but each provides a different point of view and way of thinking. Although no one map is "complete," by considering them together, we can come to a fuller understanding of the area.

The various theoretical perspectives provide different ways of looking at development. Considering them together paints a fuller portrait of the myriad ways human beings change and grow over the course of their lives. However, not all theories and claims derived from the various perspectives are accurate. How do we choose among competing explanations? The answer is *research*, which we consider in the final part of this chapter.

Module 1.2 Review

LO 1.5 Describe how the psychodynamic perspective explains lifespan development.

The psychodynamic perspective looks primarily at the influence of internal, unconscious forces on development.

LO 1.6 Describe how the behavioral perspective explains lifespan development.

The behavioral perspective focuses on external, observable behaviors as the key to development.

LO 1.7 Describe how the cognitive perspective explains lifespan development.

The cognitive perspective focuses on the processes that allow people to know, understand, and think about the world.

LO 1.8 Describe how the humanistic perspective explains lifespan development.

The humanistic perspective concentrates on the theory that each individual has the ability and motivation to reach more advanced levels of maturity and that people naturally seek to reach their full potential.

LO 1.9 Describe how the contextual perspective explains lifespan development.

The contextual perspective focuses on the relationship between individuals and the social context in which they lead their lives.

LO 1.10 Describe how the evolutionary perspective explains lifespan development.

The evolutionary perspective seeks to identify behavior that is a result of our genetic inheritance from our ancestors.

LO 1.11 Discuss the value of applying multiple perspectives to lifespan development.

The various theoretical perspectives provide different ways of looking at development. An eclectic approach paints a more complete picture of the ways humans change over the life span.

Journal Prompt

Applying Lifespan Development: What examples of human behavior have you seen that seem to have been inherited from our ancestors because they helped individuals survive and adapt more effectively? Why do you think they are inherited?

Research Methods

Psamtik, an Egyptian king who ruled in the 7th century B.C., was eager to prove a cherished Egyptian belief that his people were the oldest race on Earth. To test this notion, he developed a hypothesis: If children were never exposed to the language of their elders, they would instinctively adopt the primal language of humanity—which Psamtik believed was Egyptian.

For his experiment, Psamtik entrusted two Egyptian infants to the care of a herdsman in an isolated area. They were to be well looked after but not allowed to leave their cottage. And they were never to hear anyone speak a single word.

The experiment worked but not as Psamtik had hoped. One day, when the children were 2 years old, they greeted the herdsman with the word "Becos!" The herdsman didn't know this word but when the children continued to use it, he contacted Psamtik. The king sent for the children who repeated the strange word to him. Psamtik did some research. Becos, it turned out, was "bread" in Phrygian. Because it was the first word the children spoke, Psamtik disappointedly concluded the Phrygians had preceded the Egyptians.

With the perspective of several thousand years, we can easily see the shortcomings—both scientific and ethical—in Psamtik's approach. Yet his procedure represents an improvement over mere speculation and as such is sometimes seen as the first developmental experiment in recorded history (Hunt, 1993).

Theories and Hypotheses: Posing Developmental Questions

LO 1.12 **Describe the role that theories and hypotheses play in the study of development.**

scientific method
the process of posing and answering questions using careful, controlled techniques that include systematic, orderly observation and the collection of data

theories
explanations and predictions concerning phenomena of interest, providing a framework for understanding the relationships among an organized set of facts or principles

hypothesis
a prediction stated in a way that permits it to be tested

Questions such as those raised by Psamtik drive the study of development. In fact, developmentalists are still studying how children learn language. Others are trying to find answers to such questions as: What are the effects of malnutrition on later intellectual performance? How do infants form relationships with their parents, and does participation in day care disrupt such relationships? Why are adolescents particularly susceptible to peer pressure? Can mentally challenging activities reduce the declines in intellectual abilities related to aging? Do any mental faculties improve with age?

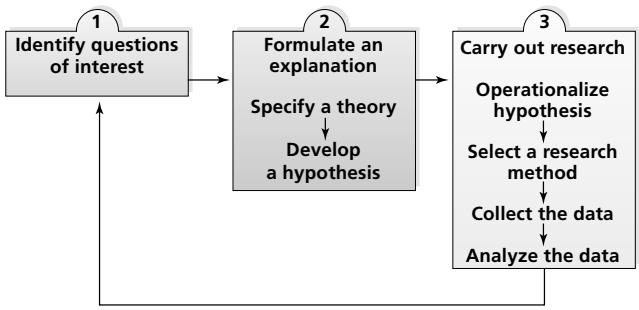
To answer such questions, developmentalists, like all psychologists and other scientists, rely on the scientific method. The **scientific method** is the process of posing and answering questions using careful, controlled techniques that include systematic, orderly observation and the collection of data. The scientific method involves three major steps: (1) identifying questions of interest, (2) formulating an explanation, and (3) carrying out research that either lends support to the explanation or refutes it (see Figure 1-4).

The scientific method involves the formulation of **theories**, the broad explanations and predictions about phenomena of interest that scientists create. For instance, many people theorize that a crucial bonding period between parent and child takes place immediately after birth and is a necessary ingredient in forming a lasting parent–child relationship. Without such a bonding period, they assume, the parent–child relationship will be forever compromised (Furnham & Weir, 1996).

Developmental researchers use theories to form hypotheses. A **hypothesis** is a prediction stated in a way that permits it to be tested. For instance, someone who subscribes to the general theory that bonding is a crucial ingredient in the parent–child relationship might derive the more specific hypothesis that adopted children whose adoptive parents never had the chance to bond with them immediately after birth may ultimately have less secure relationships with their adoptive parents. Others

Figure 1-4 The Scientific Method

A cornerstone of research, the scientific method is used by psychologists as well as researchers from all other scientific disciplines.



might derive other hypotheses, such as that effective bonding occurs only if it lasts for a certain length of time, or that bonding affects the mother–child relationship but not the father–child relationship. (In case you're wondering: As we'll discuss in Chapter 3, these particular hypotheses have *not* been upheld; there are no long-term reactions to the separation of parent and child immediately after birth, even if the separation lasts several days.)

Choosing a Research Strategy: Answering Questions

LO 1.13 Compare the two major categories of lifespan development research.

Once researchers have formed a hypothesis, they must develop a research strategy for testing its validity. There are two major categories of research: correlational research and experimental research. **Correlational research** seeks to identify whether an association or relationship between two factors exists. As we'll see, correlational research cannot be used to determine whether one factor *causes* changes in the other. For instance, correlational research could tell us if there is an association between the number of minutes a mother and her newborn child are together immediately after birth and the quality of the mother–child relationship when the child reaches 2 years of age. Such correlational research indicates whether the two factors are *associated* or *related* to one another but not whether the initial contact caused the relationship to develop in a particular way (Schutt, 2001).

correlational research
research that seeks to identify whether an association or relationship between two factors exists

In contrast, **experimental research** is designed to discover *causal* relationships between various factors. In experimental research, researchers deliberately introduce a change in a carefully structured situation to see the consequences of that change. For instance, a researcher conducting an experiment might vary the number of minutes that mothers and children interact immediately following birth, in an attempt to see whether the amount of bonding time affects the mother–child relationship.

experimental research
research designed to discover causal relationships between various factors

Because experimental research is able to answer questions of causality, it is fundamental to finding answers to various developmental hypotheses. However, some research questions cannot be answered through experiments, for either technical or ethical reasons (for example, it would be unethical to design an experiment in which a group of infants was offered no chance to bond with a caregiver at all). In fact, a great deal of pioneering developmental research—such as that conducted by Piaget and Vygotsky—employed correlational techniques. Consequently, correlational research remains an important tool in the developmental researcher's toolbox.

Correlational Studies

LO 1.14 Identify different types of correlational studies and their relationship to cause and effect.

As we've noted, correlational research examines the relationship between two variables to determine whether they are associated, or *correlated*. For instance, researchers interested in the relationship between televised aggression and subsequent behavior have found that children who watch a good deal of aggression on television—murders, crime shows, shootings, and the like—tend to be more aggressive than those who watch only a little. In other words, as we'll discuss in greater detail in Chapter 15, viewing of aggression and actual aggression are strongly associated, or correlated, with one another (Qian et al., 2013; Coyne, 2016; Delhove & Greitemeyer, 2021).

But does this mean we can conclude that the viewing of televised aggression *causes* the more aggressive behavior of the viewers? Not at all. Consider some of the other possibilities: It might be that being aggressive in the first place makes children more likely to choose to watch violent programs. In such a case, then, it is the aggressive tendency that causes the viewing behavior, and not the other way around.

AJ PHOTO/BSIP SA/Alamy Stock Photo

In experimental research, one uses controlled conditions in an attempt to discover causal relationships between various factors.

Or consider that there may be a *third* factor operating on both the viewing and the aggression. Suppose, for example, that children of lower socioeconomic status are more likely to behave aggressively *and* to watch higher levels of aggressive television than those raised in more affluent settings. In this case, the third variable—socioeconomic status—causes *both* the aggressive behavior and the television viewing. (The various possibilities are illustrated in Figure 1-5.)

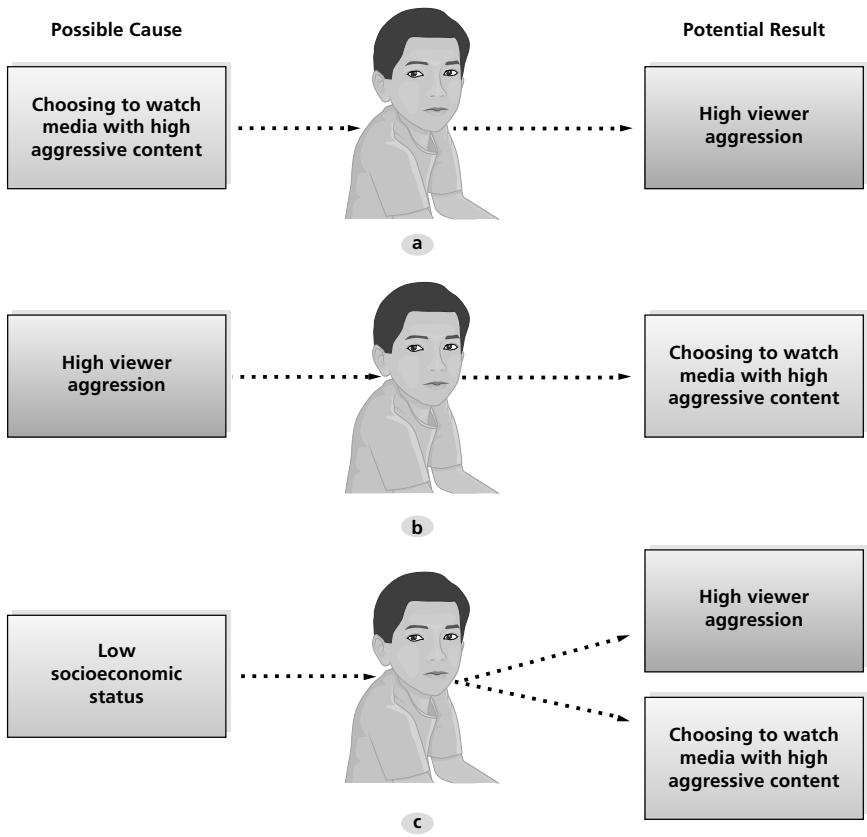
In short, finding that two variables are correlated proves nothing about causality. Although the variables may be linked causally, this is not necessarily the case.

Nevertheless, correlational studies can provide important information. For instance, as we'll see in later chapters, we know from correlational studies that the closer the genetic link between two people, the more highly associated their intelligence. We have learned that the more parents speak to their young children, the more extensive the children's vocabularies. And we know from correlational studies that the better the nutrition that infants receive, the fewer cognitive and social problems they experience later (Robb et al., 2009; Deoni et al., 2018; Christakis et al., 2019).

THE CORRELATION COEFFICIENT. The strength and direction of a relationship between two factors is represented by a mathematical score, called a *correlation coefficient*, that ranges from +1.0 to −1.0. A positive correlation indicates that as the value of one factor increases, it can be predicted that the value of the other will also increase. For instance, if we find that

Figure 1-5 Finding a Correlation

Finding a correlation between two factors does not imply that one factor causes the other factor to vary. For instance, suppose a study found that viewing television shows with high levels of aggression is correlated with actual aggression in children. The correlation may reflect at least three possibilities: (1) watching television programs containing high levels of aggression causes aggression in viewers; (2) children who behave aggressively choose to watch TV programs with high levels of aggression; or (3) some third factor, such as a child's socioeconomic status, leads both to high viewer aggression and to choosing to watch television programs with high levels of aggression. What other factors, besides socioeconomic status, might be plausible third factors?



people who make more money in their first job after college have higher scores on a survey of job satisfaction, and that people who make less money have lower scores when surveyed about their job satisfaction, we have found a positive correlation. (Higher values of the factor "salary" are associated with higher values of the factor "job satisfaction," and lower values of "salary" are associated with lower values of "job satisfaction.") The correlation coefficient, then, would be indicated by a positive number, and the stronger the association between salary and job satisfaction, the closer the number would be to +1.0.

In contrast, a correlation coefficient with a negative value informs us that as the value of one factor increases, the value of the other factor declines. For example, suppose we found that the greater the number of hours adolescents spend texting, the worse their academic performance is. Such a finding would result in a negative correlation, ranging between 0 and −1.0. More texting would be associated with lower performance, and less texting would be associated with better performance. The stronger the association between texting and school performance, the closer the correlation coefficient would be to −1.0.

Finally, it is possible that two factors are unrelated to one another. For example, it is unlikely that we would find a correlation between school performance and shoe size. In this case, the lack of a relationship would be indicated by a correlation coefficient close to 0.

It is important to reiterate what we noted previously: Even if the correlation coefficient involving two variables is strong, there is no way we can know whether one factor *causes* another factor to vary. It simply means that the two factors are associated with one another in a predictable way.

TYPES OF CORRELATIONAL STUDIES. There are several types of correlational studies. Among those that are most commonly used by developmental researchers are the following:

naturalistic observation
a type of correlational study in which some naturally occurring behavior is observed without intervention in the situation

- ***Naturalistic observation.*** **Naturalistic observation** is the observation of a naturally occurring behavior without intervention in the situation. For instance, an investigator who wishes to learn how often preschool children share toys with one another might observe a classroom over a 3-week period, recording how often the preschoolers spontaneously share with one another. The key point about naturalistic observation is that the investigator simply observes the children, without interfering with the situation whatsoever (e.g., Fanger et al., 2012; Graham et al., 2014; Snowdon & Burghardt, 2017).

  Though naturalistic observation has the advantage of identifying what children do in their "natural habitat," there is an important drawback to the method: Researchers are unable to exert control over factors of interest. For instance, in some cases researchers might find so few naturally occurring instances of the behavior of interest that they are unable to draw any conclusions at all. In addition, children who know they are being watched may modify their behavior as a result of the observation. Consequently, their behavior may not be representative of how they would behave if they were not being watched.

Rebecca Emery/DigitalVision/Getty Images

Naturalistic observation is used to examine a situation in its natural habitat without interference of any sort. What are some disadvantages of naturalistic observation?

- ***Ethnography and qualitative research.*** Increasingly, naturalistic observation employs *ethnography*, a method borrowed from the field of anthropology and used to investigate cultural questions. In ethnography, a researcher's goal is to understand a culture's values and attitudes through careful, extended examination. Typically, researchers using ethnography act as participant

observers, living for a period of weeks, months, or even years in another culture. By carefully observing everyday life and conducting in-depth interviews, researchers are able to obtain a deep understanding of the nature of life within another culture. Ethnographic studies may also be used to examine behavior in different subcultural and demographic groups or across generations. For example, a researcher might consider eating behavior across different generations to understand obesity patterns (Blomberg & Karasti, 2013; Visser et al., 2016; Wutich & Brewis, 2019).

Ethnographic studies are an example of a broader category of research known as qualitative research. In *qualitative research*, researchers choose particular settings of interest and seek to carefully describe, in narrative fashion, what is occurring and why. Qualitative research can be used to generate hypotheses that can later be tested using more objective, quantitative methods.

Although ethnographic and qualitative studies provide a fine-grained view of behavior in particular settings, they suffer from several drawbacks. As mentioned, the presence of a participant observer may influence the behavior of the individuals being studied. Furthermore, because only a small number of individuals are studied, it may be hard to generalize the findings to other settings.

Finally, ethnographers carrying out cross-cultural research may misinterpret and misconceive what they are observing, particularly in cultures that are different from their own. For example, it may be difficult for a non-Hispanic researcher to fully understand the nuances of a coming-of-age ritual in a given culture, such as the quinceañera, a celebration that occurs in many Hispanic cultures when a girl reaches the age of 15.

case study
study that involves extensive, in-depth interviews with a particular individual or small group of individuals

- ***Case studies.*** **Case studies** involve extensive, in-depth interviews with a particular individual or small group of individuals. They often are used not just to learn about the individual being interviewed but to derive broader principles or draw tentative conclusions that might apply to others. For example, case studies have been conducted on children who display unusual genius and on children who have spent their early years in the wild, apparently without human contact. These case studies have provided important information to researchers and have suggested hypotheses for future investigation (Halkier, 2013; Alpi & Evans, 2019).

  Case studies often employ the use of *diaries*, in which participants are asked to keep a record of their behavior on a regular basis. For example, a group of adolescents may be asked to record each time they interact with friends for more than 5 minutes, thereby providing a way to track their social behavior.

survey research
a type of study in which a group of people chosen to represent some larger population is asked questions about their attitudes, behavior, or thinking on a given topic

- ***Surveys.*** Surveys represent another sort of correlational research. In **survey research**, a group of people chosen to represent some larger population is asked questions about their attitudes, behavior, or thinking on a given topic. For instance, surveys have been conducted about parents' use of punishment on their children and on attitudes toward breastfeeding. From the responses, inferences are drawn regarding the larger population represented by the individuals being surveyed.

PSYCHOPHYSIOLOGICAL METHODS. Some developmental researchers, particularly those using a cognitive neuroscience approach, make use of psychophysiological methods. **Psychophysiological methods** focus on the relationship between physiological processes and behavior. For instance, a researcher might examine the relationship between blood flow within the brain and problem-solving capabilities. Similarly, some studies use infants' heart rate as a measure of their interest in stimuli to which they are exposed (Field et al., 2009; Mazoyer et al., 2009; Jones & Mize, 2016).

psychophysiological methods
research that focuses on the relationship between physiological processes and behavior

Among the most frequently used psychophysiological measures are the following:

- ***Electroencephalogram (EEG).*** The EEG reports electrical activity within the brain recorded by electrodes placed on the outside of the skull. That brain activity is transformed into a pictorial representation of the brain, permitting the representation

of brain wave patterns and diagnosis of disorders such as epilepsy and learning disabilities.

- ***Computerized tomography (CT) scan.*** In a CT scan, a computer constructs an image of the brain by combining thousands of individual X-rays taken at slightly different angles. Although it does not show brain activity, a CT scan does illuminate the structure of the brain.
- ***Functional magnetic resonance imaging (fMRI) scan.*** A fMRI provides a detailed, three-dimensional computer-generated image of brain activity by aiming a powerful magnetic field at the brain. It offers one of the best ways of learning about the operation of the brain, down to the level of individual nerves.

Experiments: Determining Cause and Effect

LO 1.15 Explain the main features of an experiment.

In an **experiment**, an investigator or experimenter typically devises two different conditions (or *treatments*) and then studies and compares the outcomes of the participants exposed to those two different conditions to see how behavior is affected. One group, the *treatment* or *experimental group*, is exposed to the treatment variable being studied; the other, the *control group*, is not.

experiment
a process in which an investigator, called an *experimenter*, devises two different experiences for participants and then studies and compares the outcomes

Although the terminology may seem daunting at first, there is an underlying logic that helps sort it out. Think in terms of a medical experiment in which the aim is to test the effectiveness of a new drug. In testing the drug, we wish to see if the drug successfully *treats* the disease. Consequently, the group that receives the drug would be called the *treatment* group. In comparison, another group of participants would not receive the drug treatment. Instead, they would be part of the no-treatment *control* group.

Similarly, suppose you want to see if exposure to movie violence makes viewers more aggressive. You might take a group of adolescents and show them a series of movies that contain a great deal of violent imagery. You would then measure their subsequent aggression. This group would constitute the treatment group. For the control group, you might take a second group of adolescents, show them movies that contain no aggressive imagery, and then measure their subsequent aggression. By comparing the amount of aggression displayed to members of the treatment and control groups, you would be able to determine whether exposure to violent imagery produces aggression in viewers. And this is just what a group of researchers in Belgium found: Running an experiment of this very sort, psychologist Jacques-Philippe Leyens and colleagues (Leyens et al., 1975) found that the level of aggression rose significantly for the adolescents who had seen the movies containing violence.

The central feature of this experiment—and all experiments—is the comparison of the consequences of different treatments. The use of both treatment and control groups allows researchers to rule out the possibility that something other than the experimental manipulation produced the results found in the experiment. For instance, if a control group was not used, experimenters could not be certain that some other factor, such as the time of day the movies were shown, the need to sit still during the movie, or even the mere passage of time, produced the changes that were observed. By using a control group, then, experimenters can draw accurate conclusions about causes and effects.

INDEPENDENT AND DEPENDENT VARIABLES. The **independent variable** is the variable that researchers manipulate in the experiment (in our example, it is the type of movie participants saw—violent or nonviolent). In contrast, the **dependent variable** is the variable that researchers measure in an experiment and expect to change as a result of the experimental manipulation. In our example, the degree of aggressive behavior shown by the participants after viewing violent or nonviolent films is the dependent variable. (One way to remember the difference: A hypothesis predicts how a dependent variable *depends* on the manipulation of the independent variable.) In an experiment studying the

independent variable
the variable that researchers manipulate in an experiment

dependent variable
the variable that researchers measure in an experiment and expect to change as a result of the experimental manipulation

effects of taking a drug, for instance, manipulating whether participants receive or do not receive a drug is the independent variable. Measurement of the effectiveness of the drug or no-drug treatment is the dependent variable. Every experiment has an independent and a dependent variable.

Experimenters need to make sure their studies are not influenced by factors other than those they are manipulating. For this reason, they take great care to make sure that the participants in both the treatment and control groups are not aware of the purpose of the experiment (which could affect their responses or behavior) and that the experimenters do not have any influence over who is chosen for the control and treatment groups. The procedure that is used is known as random assignment. In *random assignment*, participants are assigned to different experimental groups or "conditions" on the basis of chance and chance alone. By using this technique, the laws of statistics ensure that personal characteristics that might affect the outcome of the experiment are divided proportionally among the participants in the different groups, making groups equivalent. Equivalent groups achieved by random assignment allow an experimenter to draw conclusions with confidence.

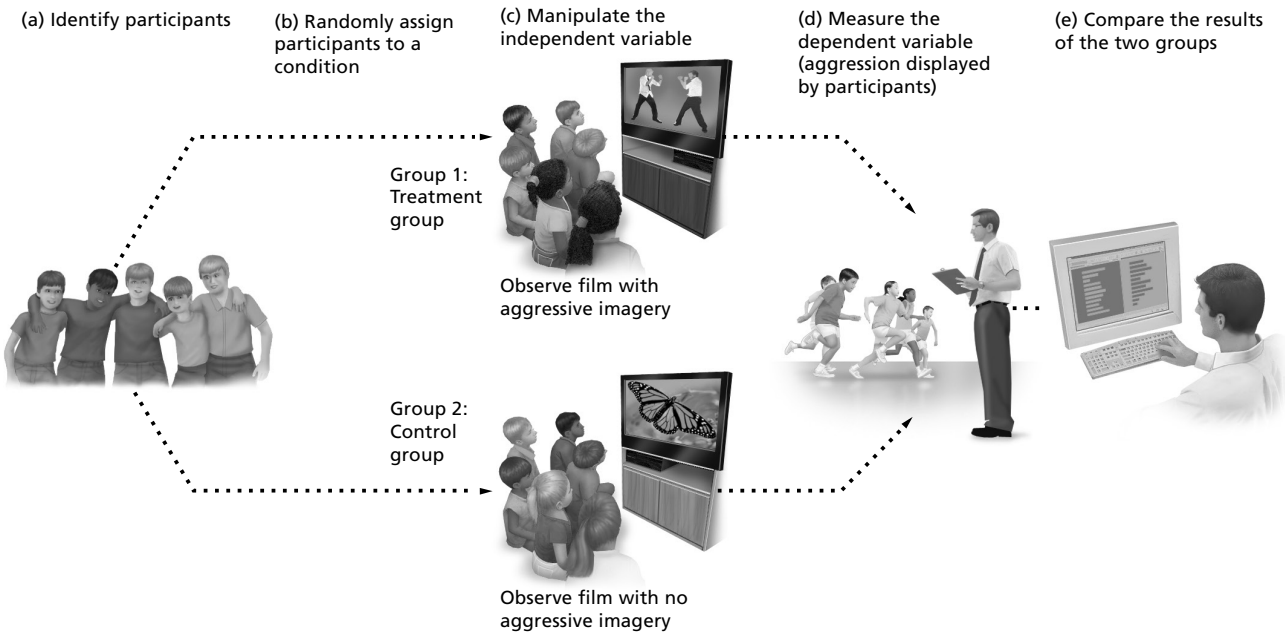
Figure 1-6 illustrates the Belgian experiment on adolescents exposed to films containing violent or nonviolent imagery and its effects on subsequent aggressive behavior. As you can see, it contains each of the elements of an experiment:

- An independent variable (the assignment to a film condition)
- A dependent variable (measurement of the adolescents' aggressive behavior)
- Random assignment to condition (viewing a film with aggressive imagery versus a film with nonaggressive imagery)
- A hypothesis that predicts the effect the independent variable will have on the dependent variable (that viewing a film with aggressive imagery will produce subsequent aggression)

Figure 1-6 Elements of an Experiment

In this experiment, researchers randomly assigned a group of adolescents to one of two conditions: viewing a film that contained violent imagery or viewing a film that lacked violent imagery (manipulation of the independent variable). Participants were observed later to determine how much aggression they showed (the dependent variable). Analysis of the findings showed that adolescents exposed to aggressive imagery showed more aggression later. In this experiment and others like it, why is random assignment important?

(Based on an experiment by Leyens et al., 1975.)



Given the advantage of experimental research—that it provides a means of determining causality—why aren't experiments always used? The answer is that there are some situations that a researcher, no matter how ingenious, simply cannot control. And there are some situations in which control would be unethical, even if it were possible. For instance, no researcher would be able to assign different groups of infants to parents of high and low socioeconomic status to learn the effects of such status on subsequent development. Similarly, we cannot control what a group of children watch on television throughout their childhood years to learn if childhood exposure to televised aggression leads to aggressive behavior later in life. Consequently, in situations in which experiments are logistically or ethically impossible, developmentalists employ correlational research.

Replication. It's important to keep in mind that a single experiment is insufficient to answer a research question definitively. Before complete confidence can be placed in a conclusion, research must be *replicated*, or repeated, sometimes using other procedures and techniques, with other types of participants. For example, researchers might want to replicate a study conducted with participants from rural locations in the United States using, instead, participants drawn from urban settings before drawing universal principles from results (Schmid et al., 2021).

The importance of replication has grown in recent years as researchers have struggled, in some cases, to replicate findings from classic studies. In fact, some researchers have called the lack of replication a fundamental weakness of developmental science and related fields, going to so far as to refer to it as a *replication crisis*. Some critics have called for a greater emphasis on research that seeks to replicate key findings from previous research (Shrout & Rodgers, 2018; Morawski, 2019; Hendriks et al., 2020).

To gain clarity across different studies and to summarize multiple findings, developmentalists increasingly turn to a procedure called meta-analysis. *Meta-analysis* is a statistical procedure that permits researchers to combine the results of many studies into one overall conclusion (Krause, 2018; Kruschke & Liddell, 2018).

CHOOSING A RESEARCH SETTING. Deciding *where* to conduct a study may be as important as determining *what* to do in the experiment. In the Belgian experiment on the influence of exposure to media aggression, the researchers used a real-world setting—a group home for boys who had been convicted of juvenile delinquency. They chose this **sample**, the group of participants selected for the experiment, because it was useful to have adolescents whose normal level of aggression was relatively high and because they could incorporate showing the films into the everyday life of the home with minimal disruption.

sample
the group of participants chosen for the experiment

Using a real-world setting like the one in the aggression experiment is the hallmark of a field study. A **field study** is a research investigation carried out in a naturally occurring setting. Field studies may be carried out in preschool classrooms, at community playgrounds, on school buses, or on street corners. Field studies capture behavior in real-life settings, where research participants may behave more naturally than they would if they were brought into a laboratory.

field study
a research investigation carried out in a naturally occurring setting

Field studies may be used in both correlational studies and experiments. Field studies typically employ naturalistic observation, the technique we discussed previously in which researchers observe some naturally occurring behavior without intervening or making changes in the situation. For instance, a researcher might examine behavior in a childcare center, view the groupings of adolescents in high school corridors, or observe older adults in a senior center.

However, it is often difficult to run an experiment in real-world settings where it is hard to exert control over the situation and environment. Consequently, field studies are more typical of correlational designs than experimental designs, and most developmental research experiments are conducted in laboratory settings. A **laboratory study** is a research investigation conducted in a controlled setting explicitly designed to hold events constant. The laboratory may be a room or building designed for research, as

laboratory study
a research investigation conducted in a controlled setting explicitly designed to hold events constant

Developmental Diversity and Your Life

Do Lifespan Development Research Participants—and Researchers—Represent the World's Diversity?

For the science of lifespan development to represent the full range of humanity, its research must incorporate children of different races, ethnicities, cultures, sexes, genders, and other categories. Furthermore, to maximize a diversity of perspectives, the field needs to include research conducted by a diverse population of researchers.

Unfortunately, although the field of lifespan development is increasingly concerned with issues of human diversity, its actual progress in this domain has been slow. For instance, although our understanding of the development of non-white children has grown substantially over the past 3 decades, it is still as not as complete as for nonminority children (Cabera, 2013; Lamb & Lerner, 2015).

At the same time, demographic changes have increased the need for research on people of color. For example, according to estimates from the U.S. Census Bureau, non-white children will account for the majority of the 74 million children in the United States in the current decade. Furthermore, more infants of color are born today than white infants (Schaeffer, 2019; Sáenz, 2019).

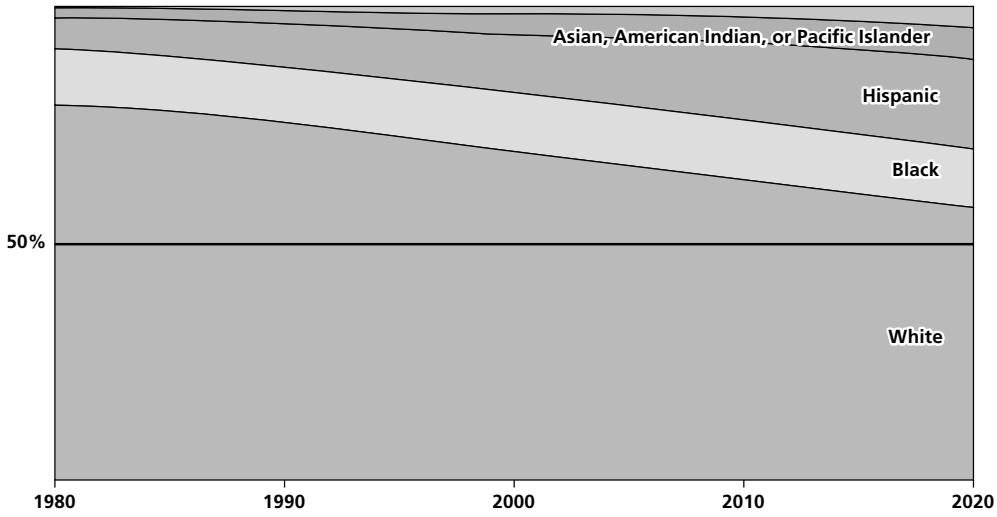
In fact, the diversity of the United States is greatly expanding. Data from the most recent U.S. Census conducted in 2020 shows the extent of the diversity of the United States and that major population shifts were occurring. Nearly every county in the country showed a decline in the white population and an increase in the population of people of color over the prior decade (see Figure 1-7). And more than a third of the country lives in a county in which people of color are in the majority, consistent with a trend in which the future majority of the country as a whole will be people of color (Lu, Smart et al., 2021).

Even when Blacks, Hispanic, and other groups are included in research, the particular participants may not represent the full range of variation that actually exists within the group. For example, Black infants used in a research study might well be disproportionally upper and middle class because parents in higher-socioeconomic groups may be more likely to have the time and transportation capabilities to bring their infants into a research center. In contrast, Blacks (as well as members of other groups) who are relatively poor will face more hurdles when it comes to participating in research.

Figure 1-7 Shifting Populations

The proportion of individuals who self-identify as people of color has grown significantly over the past 40 years, and it is projected to continue to increase.

(**Source:** U.S. Census Bureau 2021.)



in a university's psychology department. Their ability to control the settings in laboratory studies enables researchers to learn more clearly how their treatments affect participants.

The lack of inclusiveness has led to at least two problems in lifespan development research. The first is that the establishment of metrics to assess typical development

may disregard the role of the sociocultural context in shaping the attainment of particular skills. When some individuals consistently fail to meet expected standards, researchers in the past have often assumed that there is a "deficit" of some sort. Researchers rarely ask if the metric is appropriate to be used with that particular sociocultural group, if there are other skills that might be more important to examine and overlooked by the researcher, or if the underlying assumptions guiding the research are culturally biased.

The second issue concerns the application of developmental research, in particular to education. If the research that informs education is culturally biased, then the educational practices and policies developed from that research are unintentionally privileging one group of children over others.

Although there are many historical and societal reasons for the bias in lifespan development research, many contemporary scholars are advocating for new theories and research models that take the diversity of human experience into account in an effort to conduct more inclusive and equitable research. For example, a famous study that discovered what was called a "30-million word gap" illustrates the importance of conducting culturally unbiased research. In the 1990s, Betty Hart and Todd Risley published a longitudinal study that documented the language development of 42 children from three different populations: professional upper-income families, working-class families, and families on welfare (Hart & Risley, 2003; Brown et al., 2019).

As we'll discuss further in Chapter 7, Hart's and Risley's study estimated that children from higher-income homes heard about 30-million words more than children from lower-income homes, supposedly resulting in a range of language deficits in the children from low-income environments. However, recently researchers have critiqued the study on methodological and conceptual grounds, including poor sampling and unevenness across socioeconomic and race groups, overemphasis on vocabulary as a measure of language development, and lack of exploration of possible cultural variations influencing results. Furthermore, subsequent research documented the negative educational implications of constructs such as the word gap. For instance, research found that when educators believed in the reality of the word gap, they perceived Hispanic children as lacking the necessary language skills to participate in more innovative and enriching educational opportunities (Baugh, 2017; García & Otheguy, 2017; Adair et al., 2017).

In short, the implications of not conducting inclusive and equitable research can be potentially devastating for the educational prospects of children from marginalized and minoritized communities, potentially deepening the already existing socioeconomic and racial divides in our society. Something is amiss when a science that seeks to explain behavior across the life span disregards the diversity of the population. Lifespan developmentalists are aware of this issue, and they have become increasingly sensitive to the importance of appropriately framing research and theories by using participants who are fully representative of the general population.

In addition to concern regarding diversity of research participants, lifespan developmentalists have begun to express concerns regarding inclusiveness and equity among researchers. For example, women are underrepresented in the top ranks of researchers in colleges and universities. Moreover, they are paid less than men, and when they work in college settings, they are asked to perform more service activities (such as serving on committees) than men, which means they have less time for research. The same concerns affect researchers who are members of groups that have been traditionally discriminated against.

Also, developmental scientists who publish research are predominately white. This is problematic because white researchers may lack knowledge about the ways in which race shapes the experiences of others. It also may impact the degree to which non-white researchers feel they belong in the field of lifespan development. The lack of non-white researchers may limit the perspectives and ideas that are able to address fundamental problems in lifespan development (Dupree & Krauss, 2021; Gruber et al., 2021).

Theoretical and Applied Research: Complementary Approaches

LO 1.16 Distinguish between theoretical research and applied research.

theoretical research
research designed specifically to test some developmental explanation and expand scientific knowledge

applied research
research meant to provide practical solutions to immediate problems

Developmental researchers typically focus on one of two approaches to research, carrying out either theoretical research or applied research. **Theoretical research** is designed specifically to test some developmental explanation and expand scientific knowledge, whereas **applied research** is meant to provide practical solutions to immediate problems. For instance, if we were interested in the processes of cognitive change during childhood, we might carry out a study of how many digits children of various ages can remember after one exposure to multidigit numbers—a theoretical approach. Alternatively, we might focus on how children learn by examining ways in which elementary school instructors can teach children to remember information more easily. Such a study would represent applied research because the findings are applied to a particular setting and problem.

There is not always a clear-cut distinction between theoretical and applied research. For instance, is a study that examines the effects of ear infections in infancy on later hearing loss theoretical or applied research? Because such a study may help illuminate the basic processes involved in hearing, it can be considered theoretical. But to the extent that the study helps us to understand how to prevent hearing loss in children and how various medicines may ease the consequences of the infection, it may be considered applied research (Lerner et al., 2000).

In short, even applied research can help advance our theoretical understanding of a particular topical area, and theoretical research can provide concrete solutions to a range of practical problems. In fact, as we discuss in *From Research to Practice*, research of both a theoretical and an applied nature has played a significant role in shaping and resolving a variety of public policy questions.

Measuring Developmental Change

LO 1.17 Compare longitudinal research, cross-sectional research, and sequential research.

How people grow and change through their life spans is central to the work of all developmental researchers. Consequently, one of the thorniest research issues they face concerns the measurement of change and differences over age and time. To solve this problem, researchers have developed three major research strategies: longitudinal research, cross-sectional research, and sequential research.

LONGITUDINAL STUDIES: MEASURING INDIVIDUAL CHANGE. If you were interested in learning how a child's moral development changes between the ages of 3 and 5, the most direct approach would be to take a group of 3-year-olds and follow them until they were 5, testing them periodically.

longitudinal research
research in which the behavior of one or more participants in a study is measured as they age

Such a strategy illustrates longitudinal research. In **longitudinal research**, the behavior of one or more study participants is measured as they age. Longitudinal research measures change over time. By following many individuals over time, researchers can understand the general course of change across some period of life.

One of the oldest and most famous longitudinal studies, which has become a classic, is a study of gifted children begun by Lewis Terman, who lived from 1877 to 1956, in 1921. In the study, a group of 1,500 children with high IQs were tested about every 5 years, and data collection continued into adulthood. The participants provided information on everything from intellectual accomplishment to personality and longevity (Warne & Liu, 2017; Warne, 2019).

Longitudinal research has also provided great insight into language development. For instance, by tracing how children's vocabularies increase on a day-by-day basis, researchers have been able to understand the processes that underlie the human

From Research to Practice

Using Lifespan Developmental Research to Improve Public Policy

Do Head Start preschool programs enhance children's cognitive and social development?

How does the use of social media affect the self-esteem of adolescents?

How should COVID-19 vaccination hesitancy be addressed?

What are some effective ways to bolster women's confidence in their math and science aptitude?

How have children whose families experienced sudden economic deprivation due to the COVID-19 pandemic adjusted, and how can they be helped?

How should society best address the opioid epidemic affecting adolescents and adults in the United States?

Each of these questions represents a national policy issue that can be answered only by considering the results of relevant research studies. By conducting controlled studies, developmental researchers have made a number of important contributions affecting education, family life, and health on a national scale. Consider, for instance, the variety of ways that public policy issues have been informed by various types of research findings (Crupi & Brondolo, 2017; Kennedy-Hendricks et al., 2017; Fountain et al., 2021):

- *Policymakers and other professionals use research findings to determine how best to implement programs.* Research has shaped programs designed to reduce the incidence of unsafe sex among teenagers, to increase the level of prenatal care for pregnant mothers, to encourage and support women in the pursuit of math and science, and to promote flu shots for older adults. The common thread among such programs is that many of the details of the programs are built on basic research findings (Selvanathan et al., 2020).
- *Research findings can provide policymakers a way to understand and promote beneficial behavior for individuals and society.* For example, many people came to believe that the risks of getting vaccinated against COVID-19 exceeded the benefits. However, research found just the opposite: that the risks of getting vaccinated were actually minor. Similarly, research also disconfirmed a belief that childhood vaccinations are linked to autism spectrum disorder, contributing invaluable evidence to the controversy over the risks and benefits of mandatory child immunization. Researchers devised programs to promote better adherence to best practices (Chang & Kochel, 2020; Coyne-Beasley et al., 2021; Weisel, 2021).
- *Research findings and the testimony of researchers are often part of the process by which laws are drafted*. A good deal of legislation has been passed based on findings from developmental researchers. For example, research revealed that children with developmental disabilities benefit from exposure to children without special needs, ultimately leading to passage of national legislation mandating that children with disabilities be placed in regular school classes as often as possible. Research showing that children raised by same-sex couples fare just as well as children raised by a mother and father has undermined an often-used but baseless argument that same-sex marriage is harmful to children (Gartrell & Bos, 2010; Bos et al., 2016; Gabriele-Black et al., 2021).
- *Research techniques are used to evaluate the effectiveness of existing programs and policies.* Once a public policy has been implemented, it is necessary to determine whether it has been effective and successful in accomplishing its goals. To do this, researchers employ formal evaluation techniques, developed from basic research procedures. For instance, careful studies of DARE, a popular program meant to reduce children's use of drugs, began to find that it was ineffective. Using the research findings of developmentalists, DARE instituted new techniques, and preliminary findings suggest that the revised program is more effective (Phillips et al., 2016; Barlett et al., 2017; Cline & Edwards, 2017).

Shared Writing Prompt

Despite the existence of research data that might inform policy about development, politicians rarely discuss such data in their speeches and, in some cases, actively scorn research findings. Why do you think that is the case?

ability to become competent in using language (Kelloway & Francis, 2013; Sun et al., 2020; Brice et al., 2021).

Assessing Longitudinal Studies. Longitudinal studies can provide a wealth of information about change over time. However, they have several drawbacks. For one thing, they require a tremendous investment of time because researchers must wait for participants to age. Furthermore, participants often drop out over the course of the research, move away, or become ill or even die as the research proceeds.

Finally, participants who are observed or tested repeatedly may become "test-wise" and perform better each time they are assessed as they become more familiar with the

lisegagne/E+/Getty Images

Cross-sectional research allows researchers to compare representatives of different age groups at the same time.

procedure. Even if the observations of participants in a study are not terribly intrusive (such as simply recording, over a lengthy period of time, increases in vocabulary among infants and preschoolers), experimental participants may be affected by the repeated presence of an experimenter or observer.

Consequently, despite the benefits of longitudinal research, particularly its ability to look at change within individuals, developmental researchers often turn to other methods in conducting research. The alternative they choose most often is the cross-sectional study.

CROSS-SECTIONAL STUDIES. Suppose again that you want to consider how children's moral development, their sense of right and wrong, changes from ages 3 to 5. Instead of using a longitudinal approach and following the same children over several years, we might conduct the study by simultaneously looking at three groups of children—3-year-olds, 4-year-olds, and 5-year-olds—perhaps presenting each group with the same problem, and then seeing how they respond to it and explain their choices.

cross-sectional research
research in which people of different ages are compared at the same point in time

Such an approach typifies cross-sectional research. In **cross-sectional research**, people of different ages are compared at the same point in time. Cross-sectional studies provide information about differences in development between different age groups.

Assessing Cross-Sectional Studies. Cross-sectional research is considerably more economical in terms of time than longitudinal research: Participants are tested at just one point in time. For instance, Terman's study conceivably might have been completed decades ago if Terman had simply looked at a group of gifted 15-year-olds, 20-year-olds, 25-year-olds, and so forth, all the way through a group of 80-year-olds. Because the participants would not be periodically tested, there would be no chance that they would become test-wise, and problems of participant attrition would not occur. Why, then, would anyone choose to use a procedure other than cross-sectional research?

The answer is that cross-sectional research brings its own set of difficulties. Recall that every person belongs to a particular *cohort*, the group of people born at around the same time in the same place. If we find that people of different ages vary along some dimension, it may be due to differences in cohort membership, not age per se.

Consider a concrete example: If we find in a correlational study that people who are 25 years old perform better on a test of intelligence than those who are 75 years old, there are several alternative explanations. Although the finding may be due to decreased intelligence in older people, it may also be attributable to cohort differences. The group of 75-year-olds may have had less formal education than the 25-year-olds because members of the older cohort were less likely to finish high school than members of the younger one. Or perhaps the older group performed less well because as infants they received less adequate nutrition than members of the younger group. In short, we cannot fully rule out the possibility that the differences we find between people of different age groups in cross-sectional studies are due to cohort differences.

Cross-sectional studies also may suffer from *selective dropout*, in which participants in some age groups are more likely to quit participating in a study than others. For example, suppose a study of cognitive development in preschoolers includes a lengthy assessment of cognitive abilities. It is possible that young preschoolers would find the task more difficult and demanding than older preschoolers. As a result, the younger children would be more likely to discontinue participation in the study than the older preschoolers.

Finally, cross-sectional studies have an additional, and more basic, disadvantage: They are unable to inform us about changes in individuals or groups. If longitudinal studies are like videos taken of a person at various ages, cross-sectional studies are like snapshots of entirely different groups. Although we can establish differences related to age, we cannot fully determine whether such differences are related to change over time.

SEQUENTIAL STUDIES. Because both longitudinal and cross-sectional studies have drawbacks, researchers have turned to some compromise techniques. Among the most frequently employed are sequential studies, which are essentially a combination of longitudinal and cross-sectional studies.

In **sequential studies**, researchers examine a number of different age groups at several points in time. For instance, an investigator interested in children's moral behavior might begin a sequential study by examining the behavior of three groups of children who are 3 years old, 4 years old, or 5 years old at the time the study begins. (This is no different from the way a cross-sectional study would be done.)

sequential studies
research in which researchers examine a number of different age groups over several points in time

However, the study wouldn't stop there but would continue for the next several years. During this period, each of the research participants would be tested annually. Thus, the 3-year-olds would be tested at ages 3, 4, and 5; the 4-year-olds at ages 4, 5, and 6; and the 5-year-olds at ages 5, 6, and 7. Such an approach combines the advantages of longitudinal and cross-sectional research, and it permits developmental researchers to tease out the consequences of age *change* versus age *difference*. The major research techniques for studying development are summarized in Figure 1-8.

Ethics and Research

LO 1.18 Describe ethical issues that affect psychological research.

In the "research study" conducted by Egyptian King Psamtik, two children were removed from their mothers and held in isolation in an effort to learn about the roots of language. If you found yourself thinking this was extraordinarily cruel, you are in good company. Clearly, such an experiment raises blatant ethical concerns, and nothing like it would ever be done today.

To help researchers avoid ethical problems, the major organizations of developmentalists, including the Society for Research in Child Development (SRCD) and the American Psychological Association, have developed comprehensive ethical guidelines for researchers. Among the basic principles that must be followed are those involving freedom from harm, informed consent, the use of deception, and maintenance of participants' privacy (American Psychological Association, 2002; Joireman & Lange, 2015; Society for Research in Child Development [SRCD], 2021):

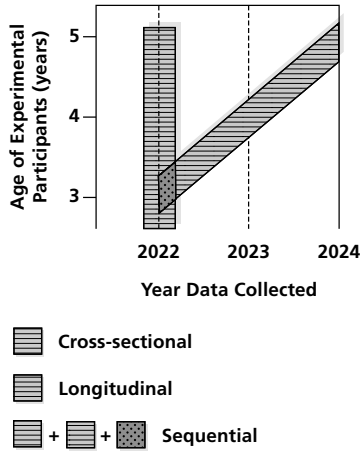
- ***Researchers must protect participants from physical and psychological harm, maximizing benefits and minimizing harm.*** Their welfare, interests, and rights come before those of researchers. In research, participants' rights always come first (McBride & Cutting, 2016; Brittain et al., 2020).
- ***Researchers must obtain informed consent from participants before their involvement in a study.*** If they are older than age 7, participants must voluntarily agree to be in a study. For those younger than 18, their parents or guardians must also provide consent.

The requirement for informed consent raises some difficult issues. Suppose, for instance, researchers want to study the psychological effects of abortion on adolescents. Although they may be able to obtain the consent of an adolescent who has had an abortion, the researchers may need to get their parents' permission as well because they are a minor. But if the adolescent hasn't told their parents about the abortion, the mere request for permission from the parents would violate their privacy—leading to a breach of ethics.

The importance of informed consent extends across a variety of populations. For example, young children, as well as participants with intellectual disabilities or psychological dysfunction, may lack the cognitive abilities to provide truly informed consent.

Figure 1-8 Research Techniques for Studying Development

In a *cross-sectional study*, 3-, 4-, and 5-year-olds are compared at a similar point in time (in the year 2022). In a *longitudinal study*, a set of participants who are 3 years old in 2022 are studied when they are 4 years old (in 2023) and when they are 5 years old (in 2024). Finally, a *sequential study* combines cross-sectional and longitudinal techniques; here, a group of 3-year-olds would be compared initially in 2022 with 4- and 5-year-olds but would also be studied 1 and 2 years later, when they themselves were 4 and 5 years old. Although the graph does not illustrate this, researchers carrying out this sequential study might also choose to retest the children who were 4 and 5 in 2022 for the next 2 years. What advantages do the three kinds of studies offer?



In addition, socioeconomic and cultural factors may impact the ability to obtain informed consent (Neyro et al., 2018; Read & Spar, 2018).

From *a Health Care Provider's* Perspective

Do you think there are some special circumstances involving adolescents, who are not legally adults, that would justify allowing them to participate in a study without obtaining their parents' permission? What might such circumstances involve?

- ***The use of deception in research must be justified and cause no harm.*** Although deception to disguise the true purpose of an experiment is permissible, any experiment that uses deception must undergo careful scrutiny by an independent panel before it is conducted. Suppose, for example, we want to know the reaction of participants to success and failure. It is ethical to tell participants that they will be playing a game when the true purpose is actually to observe how they respond to doing well or poorly on the task. However, such a procedure is ethical only if it causes no harm to participants, has been approved by a review panel, and ultimately includes a full debriefing, or explanation, for participants when the study is over (Lasser et al., 2020).
- ***Participants' privacy must be maintained.*** If participants are filmed during the course of a study, for example, they must give their permission for the recording to be viewed. Furthermore, access to the video must be carefully restricted.
- ***Promote equity in research.*** Research should promote fairness and justice for everyone involved, valuing the inherent worth and dignity of all people.

Module 1.3 Review

LO 1.12 Describe the role that theories and hypotheses play in the study of development.

Theories in development are systematically derived explanations of facts or phenomena. Theories suggest hypotheses, which are predictions that can be tested.

LO 1.13 Compare the two major categories of lifespan development research.

Correlational research seeks to identify whether an association or relationship between two factors exists. Experimental research is designed to discover *causal* relationships between various factors.

LO 1.14 Identify different types of correlational studies and their relationship to cause and effect.

Naturalistic observation, case studies, and survey research are types of correlational studies. Some developmental researchers also make use of psychophysiological methods.

LO 1.15 Explain the main features of an experiment.

Experimental research seeks to discover cause-and-effect relationships through the use of a treatment group and a control group. By manipulating the independent variable and observing changes in the dependent variable, researchers find evidence of causal links between variables. Research studies may be conducted in field settings, where participants are subject to natural conditions, or in laboratories, where conditions can be controlled.

LO 1.16 Distinguish between theoretical research and applied research.

Theoretical research is designed specifically to test some developmental explanation and expand scientific knowledge, whereas applied research is meant to provide practical solutions to immediate problems.

LO 1.17 Compare longitudinal research, cross-sectional research, and sequential research.

Researchers measure age-related change through longitudinal studies, cross-sectional studies, and sequential studies.

LO 1.18 Describe ethical issues that affect psychological research.

Developmental researchers must follow ethical standards for conducting research. Ethical guidelines for researchers cover freedom from harm, informed consent, the use of deception, and preservation of participant privacy.

Journal Prompt

Applying Lifespan Development: Formulate a theory about one aspect of human development and a hypothesis that relates to it.

Development in Your Life

Thinking Critically About "Expert" Advice

If you immediately comfort crying babies, you'll spoil them.

If you let babies cry without comforting them, they'll be untrusting and clingy as adults.

Spanking is one of the best ways to discipline your child.

Never hit your child.

If a marriage is unhappy, children are better off if their parents divorce than if they stay together.

No matter how difficult a marriage is, parents should avoid divorce for the sake of their children.

There is no lack of advice on the best way to raise a child or, more generally, to lead one's life. From best sellers such as *Cribsheet: A Data-Driven Guide to Better, More Relaxed Parenting, from Birth to Preschool* to blogs to magazine columns that provide advice on every imaginable topic, each of us is exposed to tremendous amounts of information.

Yet not all advice is equally valid. The mere fact that something is in print or on television or the Internet does not make it legitimate or accurate. Fortunately, some guidelines can help distinguish when recommendations and suggestions are reasonable and when they are not:

- **Consider the source of the advice.** Information from established, respected organizations such as the American Medical Association, the American Psychological Association, and the American Academy of Pediatrics is likely to be the result of years of study, and its accuracy is probably high. If you don't know the organization, investigate further to find out more about its goals and philosophy.
- **Evaluate the credentials of the person providing advice.** Information coming from established, acknowledged researchers and experts in a field is likely to be more accurate than that coming from a person whose credentials are obscure. Consider where the author is employed and whether they have a particular political or personal agenda.
- **Understand the difference between anecdotal evidence and scientific evidence.** Anecdotal evidence is based on one or two instances of a phenomenon, haphazardly discovered or encountered; scientific evidence is based on careful, systematic procedures. If an aunt tells you that all her children slept through the night by 2 months of age and therefore so can your child, that is quite different from reading a report that 75 percent of children sleep through the night by 9 months. Of course, even with such a report, it would be a good idea to find out how large the study was or how this number was arrived at.
- **If advice is based on research findings, there should be a clear, transparent description of the studies on which the conclusion is based.** Who were the participants in the study? What were the methods used? What do the results show? Think critically about the way in which the findings were obtained before accepting them.
- **Do not overlook the cultural context of the information.** Although an assertion may be valid in some contexts, it may not be true in all situations. For example, it is typically assumed that providing infants the freedom to move about and exercise their limbs facilitates their muscular development and mobility. Yet in some cultures, infants spend most of their time closely bound to their mothers—with no apparent long-term damage (Little et al., 2019; Möller et al., 2019).
- **Don't assume that because many people believe something, it is necessarily true.** Scientific evaluation has often proven that some of the most basic presumptions about the effectiveness of various techniques are invalid.

In short, the key to evaluating information relating to human development is to maintain a healthy dose of skepticism. No source of information is invariably, unfailingly accurate. By keeping a critical eye on the statements you encounter, you'll be in a better position to determine the real contributions made by developmentalists to understanding how humans develop over the course of their life spans.

Epilogue

As we've seen, the scope of lifespan development is broad, touching on a wide range of topics that address how people grow and change through the course of life. We've also found that there are a variety of techniques by which developmentalists seek to answer questions of interest.

Before proceeding to the next chapter, take a few minutes to reconsider the prologue of this chapter—about three families affected by the COVID-19 pandemic. Based on what you now know about lifespan development, answer the following questions:

1. What are some questions that developmentalists who study either physical, cognitive, or personality and social development might ask about the consequences of living through the pandemic?
2. What might be the possible effects on newborn Henry Lincoln of his mother's contracting COVID-19 before he was born on his later physical development?
3. How do you think the academic success of Mia, the 8-year-old, will be affected by her parents' efforts to homeschool her? Do you think she will be able to overcome any deficits that resulted from less-than-professional instruction her parents might have provided?
4. How do you think the quality of 16-year-old Alex Milesky's social life would change due to his pandemic quarantine? How do you think his relationship with his parents will be affected?

Looking Back

LO 1.1 Define the field of lifespan development and describe what it encompasses.

Lifespan development is a scientific approach to questions about growth, change, and stability in the physical, cognitive, social, and personality characteristics at all ages from conception to death.

LO 1.2 Describe the areas that lifespan development specialists cover.

Some developmentalists focus on physical development, examining the ways in which the body's makeup helps determine behavior. Other developmental specialists examine cognitive development, seeking to understand how growth and change in intellectual capabilities influence a person's behavior. Still other developmental specialists focus on personality and social development. In addition to choosing to specialize in a particular topical area, developmentalists also typically look at a particular age range.

LO 1.3 Describe some of the basic influences on human development.

Each individual is subject to normative history-graded influences, normative age-graded influences, normative sociocultural-graded influences, and non-normative life events. Culture—both broad and narrow—is an important issue in lifespan development. Many aspects of development are influenced not only by broad cultural differences but also by ethnic, racial, and socioeconomic differences within a particular culture.

LO 1.4 Summarize four key issues in the field of lifespan development.

Four key issues in lifespan development are (1) whether developmental change is continuous or discontinuous; (2) whether development is largely governed by critical periods during which certain influences or experiences must occur for development to be normal; (3) whether to focus on certain particularly important periods in human development or on the entire life span; and (4) the nature–nurture controversy, which focuses on the relative importance of genetic versus environmental influences.

LO 1.5 Describe how the psychodynamic perspective explains lifespan development.

The psychodynamic perspective is exemplified by the psychoanalytic theory of Sigmund Freud and the psychosocial theory of Erik Erikson. Freud focused attention on the unconscious and on stages through which children must pass successfully to avoid harmful fixations. Erikson identified eight distinct stages of development, each characterized by a conflict, or crisis, to work out.

LO 1.6 Describe how the behavioral perspective explains lifespan development.

The behavioral perspective typically concerns stimulus–response learning, exemplified by classical conditioning, the operant conditioning of B. F. Skinner, and Albert Bandura's social-cognitive learning theory.

LO 1.7 Describe how the cognitive perspective explains lifespan development.

Within the cognitive perspective, the most notable theorist is Jean Piaget, who identified developmental stages through which all children are assumed to pass. Each stage involves qualitative differences in thinking. In contrast, information processing approaches attribute cognitive growth to quantitative changes in mental processes and capacities, and cognitive neuroscience approaches focus on biological brain processes.

LO 1.8 Describe how the humanistic perspective explains lifespan development.

The humanistic perspective contends that people have a natural capacity to make decisions about their lives and control their behavior. The humanistic perspective emphasizes free will and the natural desire of humans to reach their full potential.

LO 1.9 Describe how the contextual perspective explains lifespan development.

The contextual perspective considers the relationship between individuals and their physical, cognitive, personality, and social worlds. The bioecological approach stresses the interrelatedness of developmental areas and the importance of broad cultural factors in human development. Lev Vygotsky's sociocultural theory emphasizes the central influence on cognitive development exerted by social interactions between members of a culture.

LO 1.10 Describe how the evolutionary perspective explains lifespan development.

The evolutionary perspective attributes behavior to genetic inheritance from our ancestors, contending that genes determine not only traits such as skin and eye color but also certain personality traits and social behaviors.

LO 1.11 Discuss the value of applying multiple perspectives to lifespan development.

The various theoretical perspectives provide different ways of looking at development. An eclectic approach paints a more complete picture of the ways humans change over the life span.

LO 1.12 Describe the role that theories and hypotheses play in the study of development.

Theories are broad explanations of facts or phenomena of interest based on a systematic integration of prior findings and theories. Hypotheses are theory-based predictions that can be tested. The process of posing and answering questions systematically is called the scientific method.

LO 1.13 Describe the two major categories of lifespan development research.

Researchers test hypotheses using correlational research (to determine whether two factors are associated) and experimental research (to discover cause-and-effect relationships).

LO 1.14 Identify different types of correlational studies and their relationship to cause and effect.

Correlational studies use naturalistic observation, case studies, and survey research to investigate whether certain characteristics of interest are associated with other characteristics. Some developmental researchers also make use of psychophysiological methods. Correlational studies lead to no direct conclusions about cause and effect.

LO 1.15 Explain the main features of an experiment.

Typically, experimental research studies are conducted on participants in a treatment group who receive the experimental treatment and participants in a control group who do not. Following the treatment, differences between the two groups can help the experimenter to determine the effects of the treatment. The independent variable is the variable that researchers manipulate in the experiment, whereas the dependent variable is the variable that researchers measure in an experiment and expect to change as a result of the experimental manipulation. Experiments may be conducted in a laboratory or in a real-world setting.

LO 1.16 Distinguish between theoretical research and applied research.

Theoretical research is designed specifically to test some developmental explanation and expand scientific knowledge, whereas applied research is meant to provide practical solutions to immediate problems.

LO 1.17 Compare longitudinal research, cross-sectional research, and sequential research.

To measure change across human ages, researchers use longitudinal studies of the same participants over time, cross-sectional studies of different-age participants conducted at one time, and sequential studies of different-age participants at several points in time.

LO 1.18 Describe ethical issues that affect psychological research.

Ethical issues that affect psychological research include the protection of participants from harm, informed consent of participants, limits on the use of deception, and the maintenance of privacy.

Key Terms and Concepts

lifespan development
physical development
cognitive development
personality development
social development
cohort
continuous change
discontinuous change
critical period
sensitive period
maturation
psychodynamic perspective
psychoanalytic theory
psychosexual development
psychosocial development
behavioral perspective
classical conditioning
operant conditioning
behavior modification
social-cognitive learning theory
cognitive perspective
information processing approaches
cognitive neuroscience approaches
humanistic perspective
contextual perspective
bioecological perspective
sociocultural theory
evolutionary perspective
scientific method
theories
hypothesis
correlational research
experimental research
naturalistic observation
case study
survey research
psychophysiological methods
experiment
independent variable
dependent variable
sample
field study
laboratory study
theoretical research
applied research
longitudinal research
cross-sectional research
sequential studies