SEVENTH EDITION

Development Through the Lifespan

Laura E. Berk

Illinois State University

Pearson

History, Theory, and Research Strategies

This photo essay chronicles the life course and family legacy of Sofie Lentschner. It begins in the early twentieth century with Sofie's infancy and concludes in the early twenty-first century, nearly four decades after Sofie's death, with the wedding of a grandson. For a description of each photo, see the legend on page 1.

What's ahead in **chapter** 1

Sofie Lentschner was born in 1908, the second child of Jewish parents who made their home in Leipzig, Germany, a city of thriving commerce and cultural vitality. Her father was a successful businessman and community leader, her mother a socialite well-known for her charm, beauty, and hospitality. As a baby, Sofie displayed the determination and persistence that would be sustained throughout her life. She sat for long periods inspecting small objects with her eyes and hands. The single event that consistently broke her gaze was the sound of the piano in the parlor. As soon as Sofie could crawl, she steadfastly pulled herself up to finger its keys and marveled at the tinkling sounds.

By the time Sofie entered elementary school, she was an introspective child, often ill at ease at the festive parties that girls of her family's social standing were expected to attend. She immersed herself in schoolwork, especially in mastering foreign languages— a regular part of German elementary and secondary education. Twice a week, she took piano lessons from the finest teacher in Leipzig. By the time Sofie graduated from high school, she spoke English and French fluently and had become an accomplished pianist. Whereas most German girls of her time married by age 20, Sofie postponed serious courtship in favor of entering university. Her parents began to wonder whether their intense, studious daughter would ever settle into family life.

Sofie wanted marriage as well as education, but her plans were thwarted by the political turbulence of her times. When Hitler rose to power in the early 1930s, Sofie's father, fearing for the safety of his wife and children, moved the family to Belgium. Conditions for Jews in Europe quickly worsened. The Nazis plundered Sofie's family home and confiscated her father's business. By the end of the 1930s, Sofie had lost contact with all but a handful of her aunts, uncles, cousins, and childhood friends, many of whom (she later learned) were herded into cattle cars and transported to Nazi death camps. In 1939, as anti-Jewish laws and atrocities intensified, Sofie's family fled to the United States.

As Sofie turned 30, her parents, convinced that she would never marry and would need a career for financial security, agreed to support her return to school. Sofie earned two master's degrees, one in music and the other in librarianship. Then, on a blind date, she met Philip, a U.S. army officer. Philip's calm, gentle nature complemented Sofie's intensity and worldliness. Within six months they married. During the next four years, two daughters and a son were born.

When World War II ended, Philip left the army and opened a small men's clothing store. Sofie divided her time between caring for the children and helping Philip in the store. Now in her forties, she was a devoted mother, but few women her age were still rearing young children. As Philip struggled with the business, he spent longer hours at work, and Sofie often felt lonely. She rarely touched the piano, which brought back painful memories of youthful life plans shattered by war. Sofie's sense of isolation

and lack of fulfillment frequently left her short-tempered. Late at night, she and Philip could be heard arguing.

As Sofie's children grew older, she returned to school again, this time earning a teaching credential. Finally, at age 50, she launched a career, teaching German and French to high school students and English to newly arrived immigrants. Besides easing her family's financial difficulties, she felt a gratifying sense of accomplishment and creativity. These years were among the most energetic and satisfying of Sofie's life. She had an unending enthusiasm for teaching—for transmitting her facility with language, her firsthand knowledge of the consequences of hatred and oppression, and her practical understanding of how to adapt to life in a new land. She watched her children, whose young lives were free of the trauma of war, adopt many of her values and commitments and begin their marital and vocational lives at the expected time.

Sofie approached age 60 with an optimistic outlook. Released from the financial burden of paying for their children's college education, she and Philip looked forward to greater leisure. Their affection and respect for each other deepened. Once again, Sofie began to play the piano. But this period of contentment was short-lived.

One morning, Sofie awoke and felt a hard lump under her arm. Several days later, her doctor diagnosed cancer. Sofie's spirited disposition and capacity to adapt to radical life changes helped her meet the illness head on. She defined it as an enemy to be fought and overcome. As a result, she lived five more years. Despite the exhaustion of chemotherapy, Sofie maintained a full schedule of teaching duties and continued to visit and run errands for her aging mother. But as she weakened physically, she no longer had the stamina to meet her classes. Bedridden for the last few weeks, she slipped quietly into death with Philip at her side. The funeral chapel overflowed with hundreds of Sofie's students.

One of Sofie's three children, Laura, is the author of this book. Married a year before Sofie died, Laura and her husband, Ken, often think of Sofie's message, spoken privately on the eve of their wedding day: "I learned from my own life and marriage that you must build a life together but also a life apart. You must

grant each other the time, space, and support to forge your own identities, your own ways of expressing yourselves and giving to others. The most important ingredient of your relationship must be respect."

Laura and Ken settled in a small Midwestern city, near Illinois State University, where they served on the faculty for many years—Laura in the Department of Psychology, Ken in the Department of Mathematics. They have two sons, David and Peter, to whom Laura has related many stories about Sofie's life and who carry her legacy forward. David shares his grandmother's penchant for teaching; he is a third-grade teacher. Peter, a lawyer, shares her love of music, and his wife Melissa—much like Sofie—is both a talented linguist and a musician. When Peter asked Melissa to marry him, he placed a family heirloom on her finger—an engagement ring that had belonged to Sofie's aunt, who perished in a Nazi death camp. In the box that held the ring, Melissa found a written copy of the story of Sofie and her family.

Sofie also had a lifelong impact on many of her students. A professor of human development wrote to Laura:

I teach a class in lifespan development. When I opened the textbook and saw the pictures of your mother, I was very surprised. I took high school German classes from her. I remember her as a very tough teacher who both held her students accountable and cared about each and every one of us. That she was an incredible teacher did not really sink in until I went to Germany during my [college] years and was able to both understand German and speak it.

Sofie's story raises a wealth of fascinating issues about human life histories:

- What determines the features that Sofie shares with others and those that make her unique—in physical characteristics, mental capacities, interests, and behaviors?
- What led Sofie to retain the same persistent, determined disposition throughout her life but to change in other essential ways?

- How do historical and cultural conditions—for Sofie, the persecution that destroyed her childhood home, caused the death of family members and friends, and led her family to flee to the United States—affect well-being throughout life?
- How does the timing of events—for example, Sofie's early exposure to multiple languages and her delayed entry into marriage, parenthood, and career—affect development?
- What factors—both genetic and environmental—led Sofie to die sooner than expected?

These are central questions addressed by **developmental science,** a field of study devoted to understanding constancy and change throughout the lifespan (Lerner et al., 2014; Overton & Molenaar, 2015). Great diversity characterizes the interests and concerns of investigators who study development. But all share a single goal: to identify those factors that influence consistencies and transformations in people from conception to death. ●

A Scientific, Applied, and Interdisciplinary Field

1.1 What is developmental science, and what factors stimulated expansion of the field?

The questions just listed are not just of scientific interest. Each has *applied,* or practical, importance as well. In fact, scientific curiosity is just one factor that led the study of development to become the exciting field it is today. Research about development has also been stimulated by social pressures to improve people's lives. For example, the beginning of public education in the early twentieth century led to a demand for knowledge about what and how to teach children of different ages. The interest of the medical profession in improving people's health required an understanding of physical development, nutrition, and disease. The social service profession's desire to treat emotional problems and to help people adjust to major life events, such as divorce, job loss, war, natural disasters, or the death of loved ones, required information about personality and social development. And parents have continually sought expert advice about child-rearing practices and experiences that would promote their children's well-being.

Our large storehouse of information about development is *interdisciplinary.* It has grown through the combined efforts of people from many fields of study. Because of the need for solutions to everyday problems at all ages, researchers from psychology, sociology, anthropology, biology, and neuroscience have joined forces in research with professionals from education, family studies, medicine, public health, and social service, to name just a few. Together, they have created the field as it exists today—a body of knowledge that is not only scientifically important but also relevant and useful.

Basic Issues

1.2 Identify three basic issues on which theories of human development take a stand.

Developmental science is a relatively recent endeavor. Studies of children did not begin until the late nineteenth and early twentieth centuries. Investigations into adult development, aging, and change over the life course emerged only in the 1960s and 1970s (Elder & Shanahan, 2006). But speculations about how people grow and change have existed for centuries. As they combined with research, they inspired the construction of *theories* of development. A **theory** is an orderly, integrated set of statements that describes, explains, and predicts behavior. For example, a good theory of infant–caregiver attachment would (1) *describe* the behaviors of babies of 6 to 8 months of age as they seek the affection and comfort of a familiar adult, (2) *explain* how and why infants develop this strong desire to bond with a caregiver, and (3) *predict* the consequences of this emotional bond for future relationships.

Theories are vital tools for two reasons. First, they provide organizing frameworks for our observations of people. In other words, they *guide and give meaning* to what we see. Second, theories that are verified by research provide a sound basis for practical action. Once a theory helps us *understand* development, we are in a much better position *to know how to improve* the welfare and treatment of children and adults.

As we will see, theories are influenced by the cultural values and belief systems of their times. But theories differ in one important way from mere opinion or belief: A theory's continued existence depends on *scientific verification.* Every theory must be tested using a fair set of research procedures agreed on by the scientific community, and the findings must endure, or be replicated over time.

Within the field of developmental science, many theories offer very different ideas about what people are like and how they change. The study of development provides no ultimate truth because investigators do not always agree on the meaning of what they see. Also, humans are complex beings; they change physically, mentally, emotionally, and socially. No single theory has explained all these aspects. But the existence of many theories helps advance knowledge as researchers continually try to support, contradict, and integrate these different points of view.

This chapter introduces you to major theories of human development and research strategies used to test them. In later chapters, we will discuss each theory in greater depth and also introduce other important but less grand theories. Although there are many theories, we can easily organize them by looking at the stand they take on three basic issues: (1) Is the course of development continuous or discontinuous? (2) Does one course of development characterize all people, or are there many possible courses? (3) What are the roles of genetic and environmental factors—nature and nurture—in development? Let's look closely at each of these issues.

Continuous or Discontinuous Development?

How can we best describe the differences in capacities among infants, children, adolescents, and adults? As Figure 1.1 illustrates, major theories recognize two possibilities.

One view holds that infants and preschoolers respond to the world in much the same way as adults do. The difference between the immature and mature being is simply one of *amount or complexity.* For example, when Sofie was a baby, her perception of a piano melody, memory for past events, and ability to categorize objects may have been much like our own. Perhaps her only limitation was that she could not perform these skills with as much information and precision as we can. If this is so, then changes in her thinking must be **continuous**—a process of gradually augmenting the same types of skills that were there to begin with.

According to a second view, infants and children have *unique ways of thinking, feeling, and behaving,* ones quite different from those of adults. If so, then development is **discontinuous**—a process in which new ways of understanding and responding to the world emerge at specific times. From this perspective, Sofie could not yet perceive, remember, and categorize experiences as a mature person can. Rather, she moved through a series of developmental steps, each with unique features, until she reached the highest level of functioning.

Theories that accept the discontinuous perspective regard development as taking place in **stages**—*qualitative* changes in thinking, feeling, and behaving that characterize specific periods of development. In stage theories, development is like climbing a staircase, with each step corresponding to a more mature, reorganized way of functioning. The stage concept also assumes that people undergo periods of rapid transformation as they step up from one stage to the next. In other words, change is fairly sudden rather than gradual and ongoing.

Does development actually occur in a neat, orderly sequence of stages? This ambitious assumption has faced significant challenges. Later in this chapter, we will review some influential stage theories.

One Course of Development or Many?

Stage theorists assume that people everywhere follow the same sequence of development. Yet the field of human development is becoming increasingly aware that children and adults live in distinct **contexts**—unique combinations of personal and environmental circumstances that can result in different paths of change. For example, a shy individual who fears social encounters develops in very different contexts from those of an outgoing agemate who readily seeks out other people. Children and adults in non-Western village societies have experiences in their families and communities that differ sharply from those of people in large Western cities. These different circumstances foster different intellectual capacities, social skills, and feelings about the self and others (Kagan, 2013a; Mistry & Dutta, 2015).

As you will see, contemporary theorists regard the contexts that shape development as many-layered and complex. On the personal side, they include heredity and biological makeup. On the environmental side, they include both immediate settings—home, school, and neighborhood—and circumstances more remote from people's everyday lives: community resources, societal values, and historical time period. Furthermore, new evidence is increasingly emphasizing *mutually influential relations* between individuals and their contexts: People not only are affected by but also contribute to the contexts in which they develop (Elder, Shanahan, & Jennings, 2015). Finally, researchers today are more conscious than ever before of cultural diversity in development.

FIGURE 1.1 Is development continuous or discontinuous? (a) Some theorists believe that development is a smooth, continuous process. Individuals gradually add more of the same types of skills. (b) Other theorists think that development takes place in discontinuous stages. People change rapidly as they step up to a new level and then change very little for a while. With each new step, the person interprets and responds to the world in a reorganized, qualitatively different way. As we will see later, still other theorists believe that development is characterized by both continuous and discontinuous change.

Infancy   **Adulthood**
(a) **Continuous Development**

Infancy   **Adulthood**
(b) **Discontinuous Development**
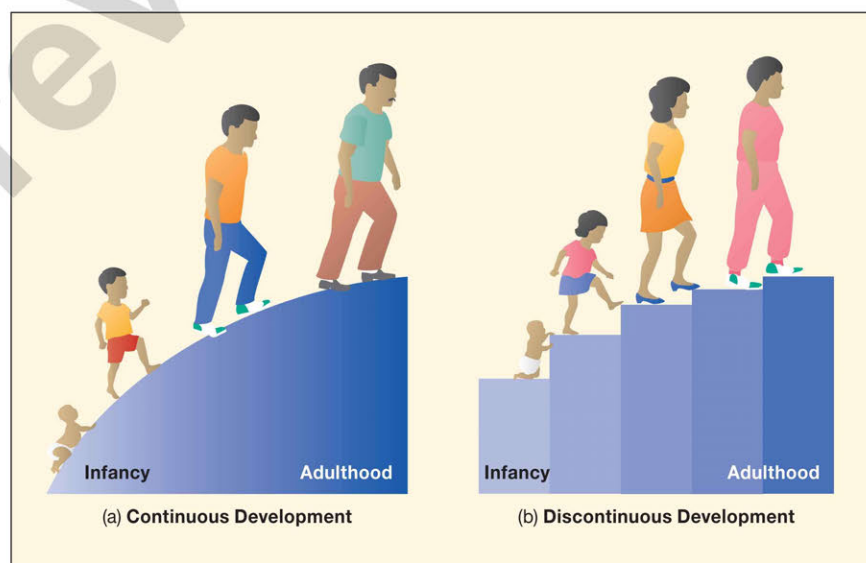
Relative Influence of Nature and Nurture?

In addition to describing the course of human development, each theory takes a stand on a major question about its underlying causes: Are genetic or environmental factors more important? This is the age-old **nature–nurture controversy.** By *nature,* we mean the hereditary information we receive from our parents at the moment of conception. By *nurture,* we mean the complex forces of the physical and social world that influence our biological makeup and psychological experiences before and after birth.

Although all theories grant roles to both nature and nurture, they vary in emphasis. Consider the following questions: Is the developing person's ability to think in more complex ways largely the result of a built-in timetable of growth, or is it primarily influenced by stimulation from parents and teachers? Do children acquire language rapidly because they are genetically predisposed to do so or because parents teach them from an early age? And what accounts for the vast individual differences among people—in height, weight, physical coordination, intelligence, personality, and social skills? Is nature or nurture more responsible?

A theory's position on the roles of nature and nurture affects how it explains individual differences. Theorists who emphasize *stability*—that individuals who are high or low in a characteristic (such as verbal ability, anxiety, or sociability) will remain so at later ages—typically stress the importance of *heredity.* If they regard environment as important, they usually point to *early experiences* as establishing a lifelong pattern of behavior. Powerful negative events in the first few years, they argue, cannot be fully overcome by later, more positive ones (Bowlby, 1980; Sroufe, Coffino, & Carlson, 2010). Other theorists, taking a more optimistic view, see development as having substantial **plasticity** throughout life—as open to change in response to influential experiences (Baltes, Lindenberger, & Staudinger, 2006; Overton & Molenaar, 2015).

Throughout this book, you will see that investigators disagree, often sharply, on the question of *stability versus plasticity.* Their answers often vary across *domains,* or aspects, of development. Think back to Sofie's story, and you will see that her linguistic ability and persistent approach to challenges were stable over the lifespan. In contrast, her psychological well-being and life satisfaction fluctuated considerably.

The Lifespan Perspective: A Balanced Point of View

1.3 Describe the lifespan perspective on development.

So far, we have discussed basic issues of human development in terms of extremes—solutions favoring one side or the other. But as we trace the unfolding of the field, you will see that the positions of many theorists have softened. Today, some theorists believe that both continuous and discontinuous changes occur.

Since the 1960s, researchers have moved from focusing only on child development to investigating development over the entire life course. This woman and her companions on a river rafting trip illustrate the health, vitality, and life satisfaction of many contemporary older adults.

Many acknowledge that development has both universal features and features unique to each individual and his or her contexts. And a growing number regard heredity and environment as inseparably interwoven, each affecting the potential of the other to modify the child's traits and capacities (Lerner et al., 2014; Overton & Molenaar, 2015).

These balanced visions owe much to the expansion of research from a nearly exclusive focus on the first two decades of life to include development during adulthood. In the first half of the twentieth century, it was widely assumed that development stopped at adolescence. Infancy and childhood were viewed as periods of rapid transformation, adulthood as a plateau, and aging as a period of decline. The changing character of the North American population awakened researchers to the idea that gains in functioning are lifelong.

Because of improvements in nutrition, sanitation, and medical knowledge, *average life expectancy* (the number of years an individual born in a particular year can expect to live) gained more in the twentieth century than in the preceding 5,000 years. In 1900, U.S. life expectancy was just under age 50; in 2000, it was 76.8. Today, it is 78.8 years in the United States and even higher in most other industrialized nations, including neighboring Canada. Life expectancy continues to increase; in the United States, it is predicted to reach 84 years in 2050. Consequently, there are more older adults—a worldwide trend that is especially striking in developed countries. People age 65 and older accounted for about 4 percent of the U.S. population in 1900, 7 percent in 1950, and 14 percent in 2013 (U.S. Census Bureau, 2015d).

Older adults are not only more numerous but also healthier and more active. Challenging the earlier stereotype of the withering person, they have contributed to a profound shift in our view of human change. Increasingly, researchers are envisioning it from a *developmental systems perspective*—as a perpetually ongoing process, extending from conception to death, that is molded by a complex network of biological, psychological, and social influences (Lerner, 2015). A leading systems approach is the **lifespan perspective.** Four assumptions make up this broader

view: that development is (1) lifelong, (2) multidimensional and multidirectional, (3) highly plastic, and (4) affected by multiple, interacting forces (Baltes, Lindenberger, & Staudinger, 2006; Smith & Baltes, 1999; Staudinger & Lindenberger, 2003).

Development Is Lifelong

According to the lifespan perspective, no age period is supreme in its impact on the life course. Rather, events occurring during each major period, summarized in Table 1.1, can have equally powerful effects on future change. Within each period, change occurs in three broad domains: *physical, cognitive,* and *emotional/social,* which we separate for convenience of discussion (see Figure 1.2 for a description of each). Yet these domains are not really distinct; they overlap and interact.

Every age period has its own agenda, its unique demands and opportunities that yield certain similarities in development across many individuals. Nevertheless, throughout life, the challenges people face and the adjustments they make are highly diverse in timing and pattern, as the remaining assumptions make clear.

Development Is Multidimensional and Multidirectional

Think back to Sofie's life and how she continually faced new demands and opportunities. From a lifespan perspective, the challenges and adjustments of development are *multidimensional*—affected by an intricate blend of biological, psychological, and social forces.

Lifespan development is also *multidirectional,* in at least two ways. First, development is not limited to improved performance. Rather, at every period, it is a joint expression of growth and decline. When Sofie directed her energies toward mastering languages and music as a school-age child, she gave up refining other skills to their full potential. Later, when she chose to become a teacher, she let go of other career options. Although gains are especially evident early in life, and losses during the final years, people of all ages can improve current skills and develop new ones, including skills that compensate for reduced functioning (de Frias, 2014; Stine-Morrow et al., 2014). Most older adults, for example, devise compensatory techniques for dealing with their increasing memory failures. They may rely more on external aids, such as calendars and lists, or generate new internal strategies, such as visualizing exactly where they will be and what they will be doing when they must keep an appointment or take medication.

Second, besides being multidirectional over time, change is multidirectional within each domain of development. Although some qualities of Sofie's cognitive functioning (such as memory) probably declined in her mature years, her knowledge of both English and French undoubtedly grew throughout her life. And she also developed new forms of thinking. For example, Sofie's wealth of experience and ability to cope with diverse problems led her to become expert in practical matters—a quality of reasoning called *wisdom.* Recall Sofie's wise advice to Laura and Ken on the eve of their wedding day. We will consider the development of wisdom in Chapter 17. Notice in the examples just mentioned how the lifespan perspective includes both continuous and discontinuous change.

TABLE 1.1
Major Periods of Human Development

PERIOD	APPROXIMATE AGE RANGE	BRIEF DESCRIPTION
Prenatal	Conception to birth	The one-celled organism transforms into a human baby with remarkable capacities to adjust to life in the surrounding world.
Infancy and toddlerhood	Birth–2 years	Dramatic changes in the body and brain support the emergence of a wide array of motor, perceptual, and intellectual capacities and first intimate ties to others.
Early childhood	2–6 years	During the "play years," motor skills are refined, thought and language expand at an astounding pace, a sense of morality is evident, and children establish ties with peers.
Middle childhood	6–11 years	The school years are marked by improved athletic abilities; more logical thought processes; mastery of fundamental reading, writing, math, and other academic knowledge and skills; advances in self-understanding, morality, and friendship; and the beginnings of peer-group membership.
Adolescence	11–18 years	Puberty leads to an adult-sized body and sexual maturity. Thought becomes abstract and idealistic and school achievement more serious. Adolescents begin to establish autonomy from the family and to define personal values and goals.
Early adulthood	18–40 years	Most young people leave home, complete their education, and begin full-time work. Major concerns are developing a career, forming an intimate partnership, and marrying, rearing children, or pursuing other lifestyles.
Middle adulthood	40–65 years	Many people are at the height of their careers and attain leadership positions. They must also help their children begin independent lives and their parents adapt to aging. They become more aware of their own mortality.
Late adulthood	65 years–death	People adjust to retirement, to decreased physical strength and health, and often to the death of an intimate partner. They reflect on the meaning of their lives.

FIGURE 1.2 Major domains of development. The three domains are not really distinct. Rather, they overlap and interact.

Under Physical Development photo: **Physical Development** Changes in body size, proportions, appearance, functioning of body systems, perceptual and motor capacities, and physical health

Under Cognitive Development photo: **Cognitive Development** Changes in intellectual abilities, including attention, memory, academic and everyday knowledge, problem solving, imagination, creativity, and language

Under Emotional and Social Development photo: **Emotional and Social Development** Changes in emotional communication, self-understanding, knowledge about other people, interpersonal skills, friendships, intimate relationships, and moral reasoning and behavior

Development Is Plastic

Lifespan researchers emphasize that development is plastic at all ages. Consider Sofie's social reserve in childhood and her decision to study rather than marry as a young adult. As new opportunities arose, Sofie moved easily into marriage and childbearing in her thirties. And although parenthood and financial difficulties posed challenges, Sofie and Philip's relationship gradually became richer and more fulfilling. In Chapter 17, we will see that intellectual performance also remains flexible with advancing age. Older adults respond to special training with substantial (but not unlimited) gains in a wide variety of mental abilities (Bamidis et al., 2014; Willis & Belleville, 2016).

Evidence on plasticity reveals that aging is not an eventual "shipwreck," as has often been assumed. Instead, the metaphor of a "butterfly"—of metamorphosis and continued potential—provides a far more accurate picture of lifespan change. Still, development gradually becomes less plastic, as both capacity and opportunity for change are reduced. And plasticity varies greatly across individuals. Some children and adults experience more diverse life circumstances. Also, as the Biology and Environment box on pages 10–11 indicates, some adapt more easily than others to changing conditions.

Development Is Influenced by Multiple, Interacting Forces

According to the lifespan perspective, pathways of change are highly diverse because *development is influenced by multiple forces:* biological, historical, social, and cultural. Although these wide-ranging influences can be organized into three categories, they work together, combining in unique ways to fashion each life course.

Age-Graded Influences. Events that are strongly related to age and therefore fairly predictable in when they occur and how long they last are called **age-graded influences.** For example, most individuals walk shortly after their first birthday, acquire their native language during the preschool years, reach puberty around age 12 to 14, and (for women) experience menopause in their late forties or early fifties. These milestones are influenced by biology, but social customs—such as starting school around age 6, getting a driver's license at age 16, and entering college around age 18—can create age-graded influences as well. Age-graded influences are especially prevalent in childhood and adolescence, when biological changes are rapid and cultures impose many age-related experiences to ensure that young people acquire the skills they need to participate in their society.

History-Graded Influences. Development is also profoundly affected by forces unique to a particular historical era. Examples include epidemics, wars, and periods of economic prosperity or depression; technological advances like the introduction of television, computers, the Internet, smartphones, and tablets; and changes in cultural values, such as attitudes toward women, ethnic minorities, and older adults. These **history-graded influences** explain why people born around the same

Biology and Environment

Resilience

John and his best friend, Gary, grew up in a rundown, crime-ridden, inner-city neighborhood. By age 10, each had experienced years of family conflict followed by parental divorce. Reared from then on in mother-headed households, John and Gary rarely saw their fathers. Both dropped out of high school and were in and out of trouble with the police.

Then their paths diverged. By age 30, John had fathered two children with women he never married, had spent time in prison, was unemployed, and drank alcohol heavily. In contrast, Gary had returned to finish high school, had studied auto mechanics at a community college, and had become manager of a gas station and repair shop. Married with two children, he had saved his earnings and bought a home. He was happy, healthy, and well-adapted to life.

A wealth of evidence shows that environmental risks—poverty, negative family interactions and parental divorce, job loss, mental illness, and drug abuse—predispose children to future problems (Masten, 2013). Why did Gary "beat the odds" and bounce back from adversity?

Research on **resilience**—the ability to adapt effectively in the face of threats to development—is receiving increased attention as investigators look for ways to protect young people from the damaging effects of stressful life conditions. This interest has been inspired by several long-term studies on the relationship of life stressors in childhood to competence and adjustment in adolescence and adulthood (Werner, 2013). In each study, some individuals were shielded from negative outcomes, whereas others had lasting problems. Four broad factors seemed to offer protection from the damaging effects of stressful life events.

Personal Characteristics

A child's genetically influenced characteristics can reduce exposure to risk or lead to experiences that compensate for early stressful events. High intelligence and socially valued talents (in music or athletics, for example) increase the chances that a child will have rewarding experiences in school and in the community that offset the impact of a stressful home life. Temperament is particularly

This teenager's close, affectionate relationship with his grandfather helps foster resilience. Strong bonds with family members can shield children from the damaging effects of stressful life conditions.

powerful. Children who have easygoing, sociable dispositions and who can readily inhibit negative emotions and impulses tend to have an optimistic outlook on life and a special capacity to adapt to change—qualities that elicit positive responses from others. In contrast, emotionally reactive and irritable

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time—called a *cohort*—tend to be alike in ways that set them apart from people born at other times.

Consider the *baby boomers,* a term used to describe people born between 1946 and 1964, the post–World War II period during which birth rates soared in most Western nations. This population increase was especially sharp in the United States: By 1960, the prewar birth rate had nearly doubled, yielding the largest gain in the nation's history. The sheer size of the baby-boom generation made it a powerful social force from the time its members became young adults; today, the baby boomers are redefining our view of middle and late adulthood (see the Cultural Influences box above).

LOOK and LISTEN

Identify a history-graded influence in your life, and speculate about its impact on people your age. Then ask someone a generation or two older than you to identify a history-graded influence in his or her life and to reflect on its impact.

Nonnormative Influences. Age-graded and history-graded influences are normative—meaning typical, or average—because each affects large numbers of people in a similar way. **Nonnormative influences** are events that are irregular: They happen to just one person or a few people and do not follow a predictable timetable. Consequently, they enhance the multidirectionality of development. Nonnormative influences that had a major impact on the direction of Sofie's life included piano lessons in childhood with an inspiring teacher; delayed marriage, parenthood, and career entry; and a battle with cancer. Because they occur irregularly, nonnormative events are difficult for researchers to capture and study. Yet, as each of us can attest from our own experiences, they can affect us in powerful ways.

Nonnormative influences have become more powerful and age-graded influences less so in contemporary adult development. Compared with Sofie's era, much greater diversity exists today in the ages at which people finish their education, enter careers, marry, have children, and retire. Indeed, Sofie's "off-time" accomplishments would have been less unusual had she been

children often tax the patience of people around them (Wang & Deater-Deckard, 2013). For example, both John and Gary moved several times during their childhoods. Each time, John became anxious and angry. Gary looked forward to making new friends and exploring a new neighborhood.

A Warm Parental Relationship

A close relationship with at least one parent who provides warmth, appropriately high expectations, monitoring of the child's activities, and an organized home environment fosters resilience (Shonkoff & Garner, 2012; Taylor, 2010). But this factor (as well as the next one) is not independent of children's personal characteristics. Children who are self-controlled, socially responsive, and able to deal with change are easier to rear and more likely to enjoy positive relationships with parents and other people. At the same time, children develop more attractive dispositions as a result of parental warmth and attention (Luthar, Crossman, & Small, 2015).

Social Support Outside the Immediate Family

The most consistent asset of resilient children is a strong bond with a competent, caring adult. For children who do not have a close bond with either parent, a grandparent, aunt, uncle, or teacher who forms a special relationship with the child can promote resilience (Masten, 2013). Gary received support in adolescence from his grandfather, who listened to Gary's concerns and helped him solve problems. In addition, Gary's grandfather had a stable marriage and work life and handled stressors skillfully. Consequently, he served as a model of effective coping.

Associations with rule-abiding peers who value academic achievement are also linked to resilience (Furman & Rose, 2015). But children who have positive relationships with adults are far more likely to establish these supportive peer ties.

Community Resources and Opportunities

Community supports—supervision offered by neighborhood adults, high-quality child-care centers and public schools, convenient and affordable health care and social services, libraries, and recreation centers—foster both parents' and children's well-being. In addition, opportunities to participate in community life help older children and adolescents overcome adversity. Extracurricular activities at school, religious youth groups, scouting, and other organizations teach important social skills, such as cooperation, leadership, and contributing to others' welfare. As participants acquire these competencies, they gain in self-reliance, self-esteem, and community commitment (Leventhal, Dupéré, & Shuey, 2015). As a college student, Gary volunteered for Habitat for Humanity, joining a team building affordable housing in low-income neighborhoods. Community involvement offered Gary opportunities to form meaningful relationships, which further strengthened his resilience.

Research on resilience highlights the complex connections between heredity and environment. Armed with positive characteristics, which stem from native endowment, favorable rearing experiences, or both, children and adolescents can act to reduce stressful situations.

But when many risks pile up, they are increasingly difficult to overcome (Obradović et al., 2009). To inoculate children against the negative effects of risk, interventions must not only reduce risks but also enhance children's protective relationships at home, in school, and in the community. This means attending to both the person and the environment—strengthening the individual's capacities while also reducing hazardous experiences.

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born two generations later. Age remains a powerful organizer of everyday experiences, and age-related expectations have certainly disappeared. But age markers have blurred, and they vary across ethnic groups and cultures. The increasing role of nonnormative events in the life course adds to the fluid nature of lifespan development.

Notice that instead of a single line of development, the lifespan perspective emphasizes many potential pathways and outcomes—an image more like tree branches extending in diverse directions, which may undergo both continuous and stagewise transformations (see Figure 1.3). Now let's turn to scientific

FIGURE 1.3 The lifespan view of development. Rather than envisioning a single line of stagewise or continuous change (see Figure 1.1 on page 6), lifespan theorists conceive of development as more like tree branches extending in diverse directions. Many pathways are possible, depending on the contexts that influence the individual's life course. Each branch in this treelike image represents a possible skill within one of the major domains of development. The crossing of the branches signifies that the domains—physical, cognitive, emotional, and social—are interrelated.
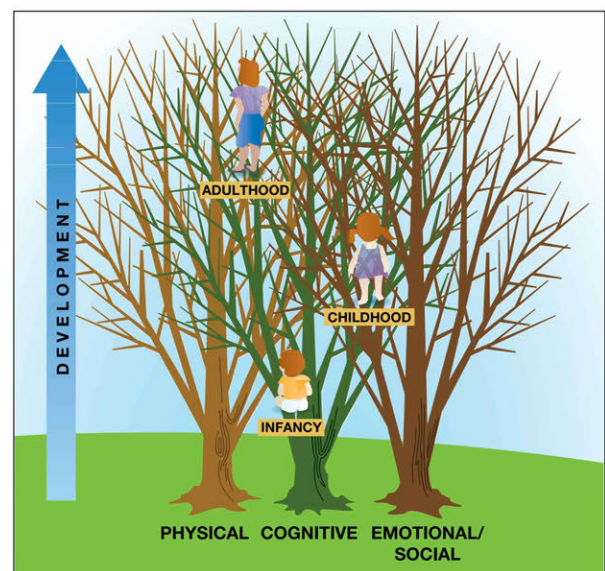
Cultural Influences

The Baby Boomers Reshape the Life Course

From 1946 to 1964, 92 percent of all American women of childbearing age gave birth, averaging almost four children each—a new baby every 8 seconds (Croker, 2007). This splurge of births, which extended for nearly two decades, yielded a unique generation often credited with changing the world. Today, the baby boomers number 74 million adults—about 23 percent of the U.S. population (Colby & Ortman, 2014). Most are middle aged, with the oldest having entered late adulthood.

Several interrelated factors sparked the post–World War II baby boom. Many people who had postponed marriage and parenthood throughout the Great Depression of the 1930s started families in the 1940s, once the economy had improved. With the end of World War II, returning GIs also began to have children. As these two cohorts focused on childbearing, they gave birth to babies who otherwise would have been spaced out over 10 to 15 years. And as economic prosperity accelerated in the 1950s, making larger families affordable, more people married at younger ages and had

several children closely spaced, which led the baby boom to persist into the 1960s (Stewart & Malley, 2004). Finally, after a war, the desire to make babies generally strengthens. Besides replacing massive population loss, new births signify hope that human life will endure.

Compared with their counterparts in the previous generation, many more young baby boomers were economically privileged. They were also the recipients of deep emotional investment from their parents, who—having undergone the deprivations of depression and war—often ranked children as the most enduring benefit of their adult lives. These factors may have engendered optimism, confidence, even a sense of entitlement (Elder, Nguyen, & Caspi, 1985). At the same time, their huge numbers—evident in overflowing school classrooms—may have sparked an intense struggle for individual recognition. By the time the boomers reached early adulthood, this set of traits led critics to label them a narcissistic, indulged, "me" generation.

From the mid-1960s to the early 1970s, the "leading-edge" baby boomers (born in the late

JEAN-MARC GIBOUX/GETTY IMAGES

A "trailing edge" baby-boomer nurse immunizes an infant in a village clinic high in the central mountains of Afghanistan. The country suffers from the second highest infant mortality rate in the world. Service roles are just one way this cohort contributes to society.

1940s and early 1950s) entered colleges and universities in record numbers, in part because of draft deferments offered to students during the Vietnam War. The boomers became better educated than any previous generation. This cohort—self-focused, socially aware, and in search of distinction—broke

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foundations of the field as a prelude to major theories that address various aspects of change.

Ask yourself

CONNECT   Distinguish age-graded, history-graded, and nonnormative influences on lifespan development. Cite an example of each in Sofie's story.

APPLY   Anna, a high school counselor, devised a program that integrates classroom learning with vocational training to help adolescents at risk for school dropout stay in school and transition to work life. What is Anna's position on *stability versus plasticity* in development? Explain.

REFLECT   Describe an aspect of your development that differs from a parent's or a grandparent's when he or she was your age. Using influences highlighted by the lifespan perspective, explain this difference in development.

Scientific Beginnings

1.4   Describe major early influences on the scientific study of development.

Scientific study of human development dates back to the late nineteenth and early twentieth centuries. Early observations of human change were soon followed by improved methods and theories. Each advance contributed to the firm foundation on which the field rests today.

Darwin: Forefather of Scientific Child Study

British naturalist Charles Darwin (1809–1882) observed the infinite variation among plant and animal species. He also saw that within a species, no two individuals are exactly alike. From these observations, he constructed his famous *theory of evolution*.

away from their parents' family- and marriage-centered lifestyles. Starting in the mid-sixties, marriage rates declined, age of first marriage rose, and divorce rates increased. And the baby boomers responded to the turbulence of those times—the assassination of President Kennedy in 1963, the Vietnam War, and growing racial tensions—by mobilizing around the antiwar, civil rights, and women's movements, yielding a generation of student activists.

By the time the "trailing-edge" boomers (born in the late 1950s and early 1960s) came of age, these movements had left an enduring mark. Even as they turned toward family life and career development, the boomers continued to search for personal meaning, self-expression, and social responsibility. By midlife, the generation had produced an unusually large number of socially concerned writers, teachers, filmmakers, and labor and community organizers, as well as innovative musicians and artists (Cole & Stewart, 1996). And a multitude of ordinary citizens worked to advance social causes.

As baby-boom women entered the labor market and struggled for career advancement and equal pay, their self-confidence grew, and they paved the way for the next generation:

On average, younger women attained this same level of self-confidence at a much earlier age (Twenge, 2001). And as baby-boom activists pressed for gender and racial equality, they influenced national policy. The 1960s saw laws passed that banned discrimination in employment practices, in racial access to public accommodations, and in sale or rental of housing. By the 1970s, progress in civil rights served as the springboard for the gay and lesbian rights movement.

The baby boomers are healthier, better educated, and financially better off than any previous mid- or late-life cohort (New Strategist Editors, 2015). Their sense of self-empowerment and innovativeness has energized efforts to increase the personal meaningfulness of their worklives and to deepen their lifelong engagement with social causes. Yet another concern of baby-boom midlifers is an intense desire to control the physical changes of aging (Hooyman, Kawamoto, & Kiyak, 2015). Far more than their predecessors, they resist growing old, as indicated by their interest in a wide array of anti-aging products and procedures—from cosmetics to Botox to plastic surgery—that are now a multi-billion-dollar U.S. industry.

Nevertheless, it is important to note that the baby boomers—though advantaged as a generation—are diverse in health status and sense of control over their lives. Those higher in education and income are considerably better off. And because retirement savings were heavily hit by the economic recession of 2007 to 2009, and pension plans with guaranteed fixed benefits had declined over the boomers' employment years, many are working longer than they had planned.

What lies ahead as each year, millions of members of this gigantic population bulge transition to late adulthood? Most analysts focus on societal burdens, such as rising social security and health-care costs. At the same time, aging boomers have more relevant experience in caring about their world—and more years left to do so—than any previous cohort of older adults. Rather than slowing down in their sixties and seventies, many remain immersed in their careers, start new businesses, or pursue challenging volunteer and service roles (Farrell, 2014). As the boomers cast aside traditional retirement, they are redefining the last third of life as a time of continued engagement, meaning, and contributions to society.

The theory emphasized two related principles: *natural selection* and *survival of the fittest.* Darwin explained that certain species survive in particular environments because they have characteristics that fit with, or are adapted to, their surroundings. Other species die off because they are less well-suited to their environments. Individuals within a species who best meet the environment's survival requirements live long enough to reproduce and pass their more beneficial characteristics to future generations. Darwin's (1859/1936) emphasis on the adaptive value of physical characteristics and behavior found its way into important developmental theories.

During his explorations, Darwin discovered that early prenatal growth is strikingly similar in many species. Other scientists concluded from Darwin's observations that the development of the human child follows the same general plan as the evolution

THOMAS TOLSTRUP/GETTY IMAGES

Darwin's theory of evolution emphasizes the adaptive value of physical characteristics and behavior. Affection and care in families promote survival and psychological well-being throughout the lifespan. Here, a granddaughter shares a moment of intimacy with her grandmother.

of the human species. Although this belief eventually proved inaccurate, efforts to chart parallels between child growth and human evolution prompted researchers to make careful observations of all aspects of children's behavior. Out of these first attempts to document an idea about development, scientific child study was born.

The Normative Period

G. Stanley Hall (1844–1924), one of the most influential American psychologists of the early twentieth century, is generally regarded as the founder of the child study movement (Cairns & Cairns, 2006). He also foreshadowed lifespan research by writing one of the few books of his time on aging. Inspired by Darwin's work, Hall and his well-known student Arnold Gesell (1880–1961) devised theories based on evolutionary ideas. They regarded development as a *maturational process*—a genetically determined series of events that unfold automatically, much like a flower (Gesell, 1933; Hall, 1904).

Hall and Gesell are remembered less for their one-sided theories than for their intensive efforts to describe all aspects of development. They launched the **normative approach,** in which measures of behavior are taken on large numbers of individuals, and age-related averages are computed to represent typical development. Using this procedure, Hall constructed elaborate questionnaires asking children of different ages almost everything they could tell about themselves—interests, fears, imaginary playmates, dreams, friendships, everyday knowledge, and more. Similarly, through careful observations and parent interviews, Gesell collected detailed normative information on the motor achievements, social behaviors, and personality characteristics of infants and children.

Gesell was also among the first to make knowledge about child development meaningful to parents by informing them of what to expect at each age. If, as he believed, the timetable of development is the product of millions of years of evolution, then children are naturally knowledgeable about their needs. His child-rearing advice recommended sensitivity to children's cues. Along with Benjamin Spock's *Baby and Child Care,* Gesell's books became a central part of a rapidly expanding child development literature for parents.

The Mental Testing Movement

While Hall and Gesell were developing their theories and methods in the United States, French psychologist Alfred Binet (1857–1911) was also taking a normative approach to child development, but for a different reason. In the early 1900s, Binet and his colleague Theodore Simon were asked by Paris school officials to find a way to identify children with learning problems who needed to be placed in special classes. To address these practical educational concerns, Binet and Simon constructed the first successful intelligence test.

In 1916, at Stanford University, Binet's test was adapted for use with English-speaking children. Since then, the English version has been known as the *Stanford-Binet Intelligence Scale.*

Besides providing a score that could successfully predict school achievement, the Binet test sparked tremendous interest in individual differences in development. Comparisons of the scores of people who vary in gender, ethnicity, birth order, family background, and other characteristics became a major focus of research. And intelligence tests moved quickly to the forefront of the nature–nurture controversy.

Mid-Twentieth-Century Theories

1.5 What theories influenced human development research in the mid-twentieth century?

In the mid-twentieth century, the study of human development expanded into a legitimate discipline. A variety of theories emerged, each of which continues to have followers today. In these theories, the European concern with the individual's inner thoughts and feelings contrasts sharply with the North American academic focus on scientific precision and concrete, observable behavior.
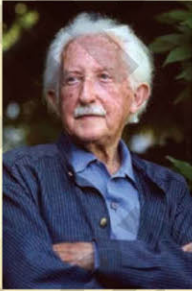
The Psychoanalytic Perspective

In the 1930s and 1940s, as more people sought help from professionals to deal with emotional difficulties, a new question had to be addressed: How and why do people become the way they are? To treat psychological problems, psychiatrists and social workers turned to an emerging approach to personality development that emphasized each individual's unique life history.

According to the **psychoanalytic perspective,** people move through a series of stages in which they confront conflicts between biological drives and social expectations. How these conflicts are resolved determines the person's ability to learn, to get along with others, and to cope with anxiety. Among the many individuals who contributed to the psychoanalytic perspective, two were especially influential: Sigmund Freud, founder of the psychoanalytic movement, and Erik Erikson.

Freud's Theory. Freud (1856–1939), a Viennese physician, sought a cure for emotionally troubled adults by having them talk freely about painful events of their childhoods. Working with these recollections, he examined his patients' unconscious motivations and constructed his **psychosexual theory,** which emphasizes that how parents manage their child's sexual and aggressive drives in the first few years is crucial for healthy personality development.

In Freud's theory, three parts of the personality—id, ego, and superego—become integrated during five stages, summarized in Table 1.2. The *id,* the largest portion of the mind, is the source of basic biological needs and desires. The *ego,* the conscious, rational part of personality, emerges in early infancy to redirect the id's impulses so they are discharged in acceptable ways. Between

TABLE 1.2

Freud's Psychosexual Stages and Erikson's Psychosocial Stages Compared

APPROXIMATE AGE	FREUD'S PSYCHOSEXUAL STAGE	ERIKSON'S PSYCHOSOCIAL STAGE
Birth–1 year	*Oral:* If oral needs are not met through sucking from breast or bottle, the individual may develop such habits as thumb sucking, fingernail biting, overeating, or smoking.	*Basic trust versus mistrust:* From warm, responsive care, infants gain a sense of trust, or confidence, that the world is good. Mistrust occurs if infants are neglected or handled harshly.
1–3 years	*Anal:* Toddlers and preschoolers enjoy holding and releasing urine and feces. If parents toilet train before children are ready or make too few demands, conflicts about anal control may appear in the form of extreme orderliness or disorder.	*Autonomy versus shame and doubt:* Using new mental and motor skills, children want to decide for themselves. Parents can foster autonomy by permitting reasonable free choice and not forcing or shaming the child.
3–6 years	*Phallic:* As preschoolers take pleasure in genital stimulation, Freud's Oedipus conflict for boys and Electra conflict for girls arise: Children feel a sexual desire for the other-sex parent. To avoid punishment, they give up this desire and adopt the same-sex parent's characteristics and values. As a result, the superego is formed, and children feel guilty when they violate its standards.	*Initiative versus guilt:* Through make-believe play, children gain insight into the person they can become. Initiative—a sense of ambition and responsibility—develops when parents support their child's sense of purpose. If parents demand too much self-control, children experience excessive guilt.
6–11 years	*Latency:* Sexual instincts die down, and the superego strengthens as children acquire new social values from adults and same-sex peers.	*Industry versus inferiority:* At school, children learn to work and cooperate with others. Inferiority develops when negative experiences at home, at school, or with peers lead to feelings of incompetence.
Adolescence	*Genital:* With puberty, sexual impulses reappear. Successful development during earlier stages leads to marriage, mature sexuality, and child rearing.	*Identity versus role confusion:* By exploring values and vocational goals, young people form a personal identity. The negative outcome is confusion about future adult roles.
Early adulthood		*Intimacy versus isolation:* Young adults establish intimate relationships. Because of earlier disappointments, some individuals cannot form close bonds and remain isolated.
Middle adulthood		*Generativity versus stagnation:* Generativity means giving to the next generation through child rearing, caring for others, or productive work. The person who fails in these ways feels an absence of meaningful accomplishment.
Old age		*Integrity versus despair:* Integrity results from feeling that life was worth living as it happened. Older people who are dissatisfied with their lives fear death.

Erik Erikson

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3 and 6 years of age, the *superego,* or conscience, develops as parents insist that children conform to the values of society. Now the ego faces the increasingly complex task of reconciling the demands of the id, the external world, and conscience—for example, the id impulse to grab an attractive toy from a playmate versus the superego's warning that such behavior is wrong. According to Freud, the relations established among id, ego, and superego during the preschool years determine the individual's basic personality.

Freud (1938/1973) believed that during childhood, sexual impulses shift their focus from the oral to the anal to the genital regions of the body. In each stage, parents walk a fine line between permitting too much or too little gratification of their child's basic needs. If parents strike an appropriate balance, children grow into well-adjusted adults with the capacity for mature sexual behavior and investment in family life.

Freud's theory was the first to stress the influence of the early parent–child relationship on development. But his perspec-tive was eventually criticized. First, it overemphasized the influence of sexual feelings in development. Second, because it was based on the problems of sexually repressed, well-to-do adults in nineteenth-century Victorian society, it did not apply in other cultures. Finally, Freud had not studied children directly.

Erikson's Theory. Several of Freud's followers took what was useful from his theory and improved on his vision. The most important is Erik Erikson (1902–1994), who expanded the picture of development at each stage. In his **psychosocial theory**, Erikson emphasized that in addition to mediating between id impulses and superego demands, the ego makes a positive contri-bution to development, acquiring attitudes and skills that make the individual an active, contributing member of society. A basic psychosocial conflict, which is resolved along a continuum from positive to negative, determines healthy or maladaptive outcomes at each stage. As Table 1.2 shows, Erikson's first five stages parallel Freud's stages, but Erikson added three adult stages.

A child of the Kazakh people of Mongolia learns from her grandfather how to train an eagle to hunt small animals, essential for the meat-based Kazakh diet. As Erikson recognized, this parenting practice is best understood in relation to the competencies valued and needed in Kazakh culture.

Unlike Freud, Erikson pointed out that normal development must be understood in relation to each culture's life situation. For example, in the 1940s, he observed that Yurok Indians of the northwest coast of the United States deprived newborns of breastfeeding for the first 10 days, instead feeding them a thin soup. At age 6 months, infants were abruptly weaned—if necessary, by having the mother leave for a few days. From our cultural vantage point, these practices seem cruel. But Erikson explained that because the Yurok depended on salmon, which fill the river just once a year, the development of self-restraint was essential for survival. In this way, he showed that child rearing is responsive to the competencies valued and needed by an individual's society.

Contributions and Limitations of the Psychoanalytic Perspective.

A special strength of the psychoanalytic perspective is its emphasis on the individual's unique life history as worthy of study and understanding. Consistent with this view, psychoanalytic theorists accept the *clinical,* or *case study, method,* which synthesizes information from a variety of sources into a detailed picture of the personality of a single person. (We will discuss this method further at the end of this chapter.) Psychoanalytic theory has also inspired a wealth of research on many aspects of emotional and social development, including infant–caregiver attachment, aggression, sibling relationships, child-rearing practices, morality, gender roles, and adolescent identity.

Despite its extensive contributions, the psychoanalytic perspective is no longer in the mainstream of human development research. Psychoanalytic theorists may have become isolated from the rest of the field because they were so strongly committed to in-depth study of individuals that they failed to consider other methods. In addition, many psychoanalytic ideas, such as psychosexual stages and ego functioning, are too vague to be tested empirically (Crain, 2010).

Nevertheless, Erikson's broad outline of lifespan change captures key, optimal psychosocial attainments during each major period of the life course. We will return to it, along with other perspectives inspired by Erikson's theory, in later chapters.

Behaviorism and Social Learning Theory

As the psychoanalytic perspective gained in prominence, the study of development was also influenced by a very different perspective. According to **behaviorism,** directly observable events—stimuli and responses—are the appropriate focus of study. North American behaviorism began in the early twentieth century with the work of John Watson (1878–1958), who wanted to create an objective science of psychology.

Traditional Behaviorism.

Watson was inspired by Russian physiologist Ivan Pavlov's studies of animal learning. Pavlov knew that dogs release saliva as an innate reflex when they are given food. But he noticed that his dogs were salivating before they tasted any food—when they saw the trainer who usually fed them. The dogs, Pavlov reasoned, must have learned to associate a neutral stimulus (the trainer) with another stimulus (food) that produces a reflexive response (salivation). Because of this association, the neutral stimulus alone could bring about a response resembling the reflex. Eager to test this idea, Pavlov successfully taught dogs to salivate at the sound of a bell by pairing it with the presentation of food. He had discovered *classical conditioning.*

Watson wanted to find out if classical conditioning could be applied to children's behavior. In a historic experiment, he taught Albert, an 11-month-old infant, to fear a neutral stimulus—a soft white rat—by presenting it several times with a sharp, loud sound, which naturally scared the baby. Little Albert, who at first had reached out eagerly to touch the furry rat, began to cry and retreat at the sight of it (Watson & Raynor, 1920). In fact, Albert's fear was so intense that researchers eventually challenged the ethics of studies like this one. Watson concluded that environment is the supreme force in development and that adults can mold children's behavior by carefully controlling stimulus–response associations. He viewed development as continuous—a gradual increase with age in the number and strength of these associations.

Another form of behaviorism was B. F. Skinner's (1904–1990) *operant conditioning theory.* According to Skinner, the frequency of a behavior can be increased by following it with a wide variety of *reinforcers,* such as food, praise, or a friendly smile, or decreased through *punishment,* such as disapproval or withdrawal of privileges. As a result of Skinner's work, operant conditioning became a broadly applied learning principle. We will consider these basic learning capacities further in Chapter 4.

Social Learning Theory. Psychologists wondered whether behaviorism might offer a more direct and effective explanation of the development of social behavior than the less precise concepts of psychoanalytic theory. This sparked approaches that built on the principles of conditioning, providing expanded views of how children and adults acquire new responses.

Several kinds of **social learning theory** emerged. The most influential, devised by Albert Bandura (1925–), emphasizes *modeling,* also known as *imitation* or *observational learning,* as a powerful source of development. The baby who claps her hands after her mother does so, the child who angrily hits a playmate in the same way that he has been punished at home, and the teenager who wears the same clothes and hairstyle as her friends at school are all displaying observational learning. In his early work, Bandura found that diverse factors affect children's motivation to imitate: their own history of reinforcement or punishment for the behavior, the promise of future reinforcement or punishment, and even observations of the model being reinforced or punished.

Bandura's work continues to influence much research on social development. But today, his theory stresses the importance of *cognition,* or thinking. In fact, the most recent revision of Bandura's (1992, 2001) theory places such strong emphasis on how we think about ourselves and other people that he calls it a *social-cognitive* rather than a social learning approach.

In Bandura's revised view, children gradually become more selective in what they imitate. From watching others engage in self-praise and self-blame and through feedback about the worth of their own actions, children develop *personal standards* for behavior and *a sense of self-efficacy*—the belief that their own abilities and characteristics will help them succeed. These cognitions guide responses in particular situations (Bandura, 2001, 2011). For example, imagine a parent who often remarks, "I'm glad I kept working on that task, even though it was hard," and

who encourages persistence by saying, "I know you can do a good job on that homework!" Soon the child starts to view herself as hardworking and high-achieving and selects people with these characteristics as models. In this way, as individuals acquire attitudes, values, and convictions about themselves, they control their own learning and behavior.

Contributions and Limitations of Behaviorism and Social Learning Theory. Behaviorism and social learning theory have been helpful in treating a wide range of adjustment problems. **Applied behavior analysis** consists of careful observations of individual behavior and related environmental events, followed by systematic changes in those events based on procedures of conditioning and modeling. The goal is to eliminate undesirable behaviors and increase desirable responses. It has been used to relieve a wide range of difficulties in children and adults, ranging from poor time management and unwanted habits to serious problems, such as language delays, persistent aggression, and extreme fears (Heron, Hewar, & Cooper, 2013).

Nevertheless, many theorists believe that behaviorism and social learning theory offer too narrow a view of important environmental influences, which extend beyond immediate reinforcement, punishment, and modeled behaviors to people's rich physical and social worlds. Behaviorism and social learning theory have also been criticized for underestimating people's contributions to their own development. Bandura, with his emphasis on cognition, is unique among theorists whose work grew out of the behaviorist tradition in granting children and adults an active role in their own learning.

Piaget's Cognitive-Developmental Theory

If one individual has influenced research on child development more than any other, it is Swiss cognitive theorist Jean Piaget (1896–1980). North American investigators had been aware of Piaget's work since 1930. But they did not grant it much attention until the 1960s, mainly because Piaget's ideas were at odds with behaviorism, which dominated North American psychology in the mid-twentieth century (Watrin & Darwich, 2012). Piaget did not believe that children's learning depends on reinforcers, such as rewards from adults. According to his **cognitive-developmental theory,** children actively construct knowledge as they manipulate and explore their world.

Piaget's Stages.
Piaget's view of development was greatly influenced by his early training in biology. Central to his theory is the biological concept of *adaptation* (Piaget, 1971). Just as structures of the body are adapted to fit with the environment, so structures of the mind develop to better fit with, or represent, the external world. In infancy and early childhood, Piaget claimed, children's understanding is different from adults'. For example, he believed that young babies do not realize that an object hidden from view—a favorite toy or even the mother—continues to exist. He also concluded that preschoolers' thinking is full of

Social learning theory recognizes that children acquire many skills through modeling. By observing and imitating his father's behavior, this child learns an important skill.

TABLE 1.3
Piaget's Stages of Cognitive Development

STAGE	PERIOD OF DEVELOPMENT	DESCRIPTION
Sensorimotor	Birth–2 years	Infants "think" by acting on the world with their eyes, ears, hands, and mouth. As a result, they invent ways of solving sensorimotor problems, such as pulling a lever to hear the sound of a music box, finding hidden toys, and putting objects into and taking them out of containers.
Preoperational	2–7 years	Preschool children use symbols to represent their earlier sensorimotor discoveries. Development of language and make-believe play takes place. However, thinking lacks the logic of the two remaining stages.
Concrete operational	7–11 years	Children's reasoning becomes logical and better organized. School-age children understand that a certain amount of lemonade or play dough remains the same even after its appearance changes. They also organize objects into hierarchies of classes and subclasses. However, children think in a logical, organized fashion only when dealing with concrete information they can perceive directly.
Formal operational	11 years on	The capacity for abstract, systematic thinking enables adolescents, when faced with a problem, to start with a hypothesis, deduce testable inferences, and isolate and combine variables to see which inferences are confirmed. Adolescents can also evaluate the logic of verbal statements without referring to real-world circumstances.

Jean Piaget

faulty logic. For example, children younger than age 7 commonly say that the amount of a liquid changes when it is poured into a different-shaped container. According to Piaget, children eventually revise 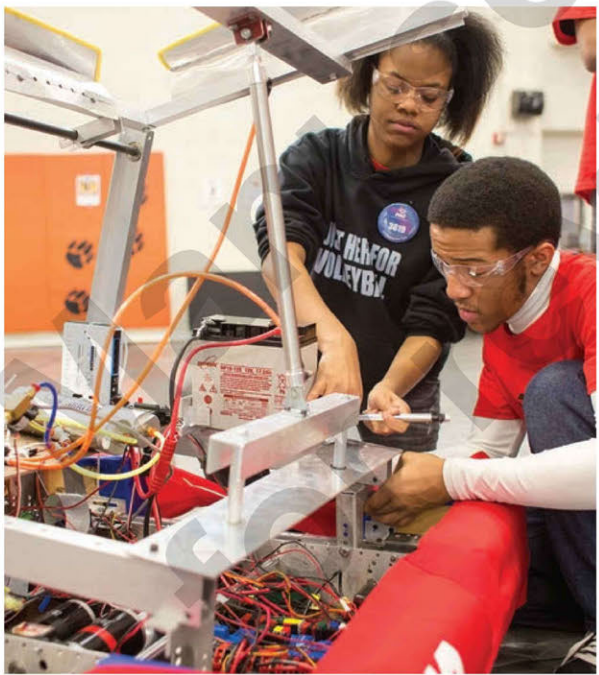these incorrect ideas in their ongoing efforts to achieve an *equilibrium,* or balance, between internal structures and information they encounter in their everyday worlds.

In Piaget's theory, as the brain develops and children's experiences expand, they move through four broad stages, each characterized by qualitatively distinct ways of thinking. Table 1.3 provides a brief description of Piaget's stages. Cognitive development begins in the *sensorimotor stage* with the baby's use of the senses and movements to explore the world. These action patterns evolve into the symbolic but illogical thinking of the preschooler in the *preoperational stage.* Then cognition is transformed into the more organized, logical reasoning of the school-age child in the *concrete operational stage.* Finally, in the *formal operational stage,* thought becomes the abstract, systematic reasoning system of the adolescent and adult.

Piaget devised special methods for investigating how children think. Early in his career, he carefully observed his three infant children and presented them with everyday problems, such as an attractive object that could be grasped, mouthed, kicked, or searched for. From their responses, Piaget derived his ideas about cognitive changes during the first two years. To study childhood and adolescent thought, Piaget adapted the clinical method of psychoanalysis, conducting open-ended *clinical interviews* in which a child's initial response to a task served as the basis for Piaget's next question. We will look more closely at this technique when we discuss research methods later in this chapter.

In Piaget's formal operational stage, adolescents think systematically and abstractly. These high school students participating in a robotics competition solve problems by generating hypotheses about procedures that might work and conducting systematic tests to observe their real-world consequences.

Contributions and Limitations of Piaget's Theory.
Piaget convinced the field that children are active learners whose minds consist of rich structures of knowledge. Besides investigating children's understanding of the physical world, Piaget explored their reasoning about the social world. His stages have

sparked a wealth of research on children's conceptions of themselves, other people, and human relationships. In practical terms, Piaget's theory encouraged the development of educational philosophies and programs that emphasize discovery learning and direct contact with the environment.

Despite Piaget's overwhelming contributions, his theory has been challenged. Research indicates that Piaget underestimated the competencies of infants and preschoolers. When young children are given tasks scaled down in difficulty and relevant to their everyday experiences, their understanding appears closer to that of the older child and adult than Piaget assumed. Also, adolescents generally reach their full intellectual potential only in areas of endeavor in which they have had extensive education and experience. These findings have led many researchers to conclude that cognitive maturity depends heavily on the complexity of knowledge sampled and the individual's familiarity with the task (Miller, 2011).

Furthermore, children's performance on Piagetian problems can be improved with training—findings that call into question Piaget's assumption that discovery learning rather than adult teaching is the best way to foster development (Klahr, Matlen, & Jirout, 2013; Siegler & Svetina, 2006). Critics also point out that Piaget's stagewise account pays insufficient attention to social and cultural influences on development. Finally, lifespan theorists—challenging Piaget's conclusion that no new stages occur after adolescence—have proposed important transformations in adulthood (Heckhausen, Wrosch, & Schulz, 2010; ; Moshman, 2011; Perry, 1970/1998).

Today, the field of developmental science is divided over its loyalty to Piaget's ideas. Those who continue to find merit in Piaget's stages often accept a modified view—one in which changes in thinking take place more gradually than Piaget believed (Case, 1998; Halford & Andrews, 2011; Mascolo & Fischer, 2015). Among those who disagree with Piaget's stage sequence, some have embraced an approach that emphasizes continuous gains in children's cognition: information processing. And still others have been drawn to theories that focus on the role of children's social and cultural contexts. We take up these approaches in the next section.

Ask yourself

CONNECT Although social learning theory focuses on social development and Piaget's theory on cognitive development, each has enhanced our understanding of other domains. Mention an additional domain addressed by each theory.

APPLY A 4-year-old becomes frightened of the dark and refuses to go to sleep at night. How would a psychoanalyst and a behaviorist differ in their views of how this problem developed?

REFLECT Illustrate Bandura's ideas by describing a personal experience in which you observed and received feedback from another person that strengthened your sense of self-efficacy—belief that your abilities and characteristics will help you succeed.

Recent Theoretical Perspectives

1.6 Describe recent theoretical perspectives on human development.

New ways of understanding the developing person are constantly emerging—questioning, building on, and enhancing the discoveries of earlier theories. Today, a wealth of fresh approaches and research emphases is broadening our insights into lifespan development.

Information Processing

In the 1970s and 1980s, researchers turned to the field of cognitive psychology for ways to understand the development of thinking. The design of digital computers that use mathematically specified steps to solve problems suggested to psychologists that the human mind might also be viewed as a symbol-manipulating system through which information flows—a perspective called **information processing** (Munakata, 2006). From the time information is presented to the senses at *input* until it emerges as a behavioral response at *output,* information is actively coded, transformed, and organized.

Information-processing researchers often design flowcharts to map the precise steps individuals use to solve problems and complete tasks, much like the plans devised by programmers to get computers to perform a series of "mental operations." They seek to clarify how both task characteristics and cognitive limitations—for example, memory capacity or available knowledge—influence performance (Birney & Sternberg, 2011). To see the usefulness of this approach, let's look at an example.

In a study of problem solving, a researcher provided a pile of blocks varying in size, shape, and weight and asked school-age children to build a bridge across a "river" (painted on a floor mat) that was too wide for any single block to span (Thornton, 1999). Figure 1.4 shows one solution: Two planklike blocks span the water, each held in place by the counterweight of heavy blocks on the bridge's towers. Whereas older children easily built successful bridges, only one 5-year-old did. Careful tracking of her efforts revealed that she repeatedly tried unsuccessful strategies, such as pushing two planks together and pressing down on their ends to hold them in place. But eventually, her experimentation triggered the idea of using the blocks as counterweights. Her mistaken procedures helped her understand why the counterweight approach worked.

Many information-processing models exist. Some, like the one just considered, track mastery of one or a few tasks. Others describe the human cognitive system as a whole (Gopnik & Tenenbaum, 2007; Ristic & Enns, 2015; Westermann et al., 2006). These general models are used as guides for asking questions about broad changes in thinking: Does a child's ability to solve problems become more organized and "planful" with age? Why is information processing slower among older than younger
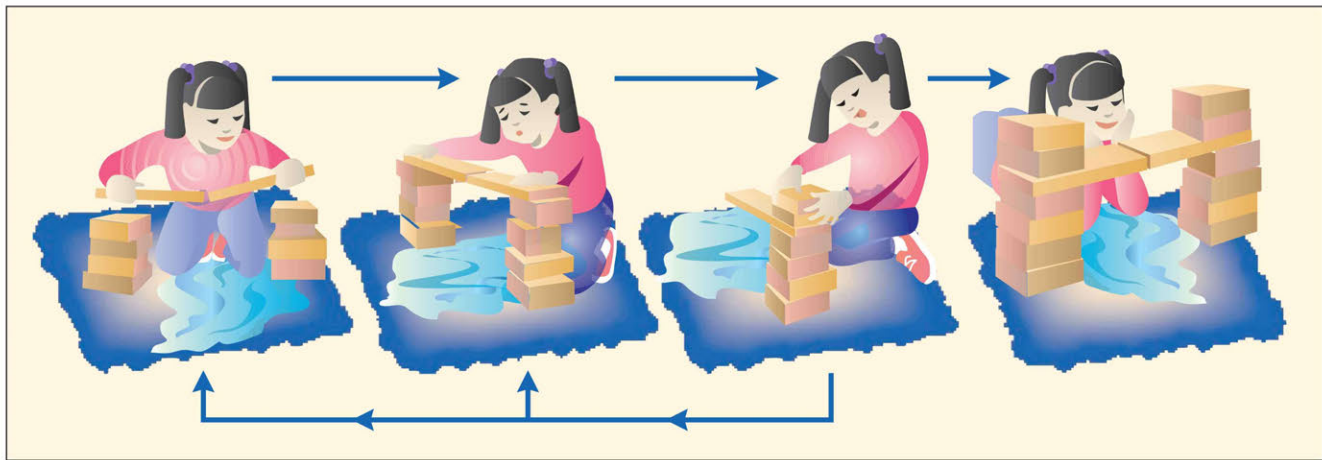
FIGURE 1.4 **Information-processing flowchart showing the steps that a 5-year-old used to solve a bridge-building problem.** Her task was to use blocks varying in size, shape, and weight, some of which were planklike, to construct a bridge across a "river" (painted on a floor mat) too wide for any single block to span. The child discovered how to counterweight and balance the bridge. The arrows reveal that, even after building a successful counterweight, she returned to earlier, unsuccessful strategies, which seemed to help her understand why the counterweight approach worked. (Based on Thornton, 1999.)

adults? Are declines in memory during old age evident on all types of tasks or only some?

Like Piaget's theory, the information-processing approach regards people as actively making sense of their own thinking (Halford & Andrews, 2011; Munakata, 2006). But unlike Piaget's theory, it does not divide development into stages. Rather, most information-processing researchers regard the thought processes studied—perception, attention, memory, categorization of information, planning, problem solving, and comprehension of written and spoken prose—as similar at all ages but present to a lesser or greater extent. Their view of development is one of continuous change.

A great strength of the information-processing approach is its commitment to rigorous research methods. Because it has provided precise accounts of how children and adults tackle many cognitive tasks, its findings have important implications for education. Currently, researchers are intensely interested in the development of an array of "executive" processes that enable children and adults to manage their thoughts, emotions, and actions. These capacities—variously labeled self-control, self-regulation, executive function, planning, delay of gratification, and more—are essential for attaining our goals in challenging situations (Carlson, Zelazo, & Faja, 2013; Chevalier, 2015; Müller & Kerns, 2015). As we will see in later chapters, executive processes are consistent predictors of academic achievement, socially competent behavior, life success, and psychological well-being.

Nevertheless, information processing has fallen short in some respects. It has been better at analyzing thinking into its components than at putting them back together into a comprehensive theory. And it has had little to say about aspects of cognition that are not linear and logical, such as imagination and creativity.

Developmental Neuroscience

Over the past three decades, as information-processing research expanded, a new area of investigation arose called **developmental cognitive neuroscience.** It brings together researchers from psychology, biology, neuroscience, and medicine to study the relationship between changes in the brain and the developing person's cognitive processing and behavior patterns.

Improved methods for analyzing brain activity while children and adults perform various tasks have greatly enhanced knowledge of relationships between brain functioning and behavior (de Haan, 2015). Armed with these brain electrical-recording and imaging techniques (which we will consider in Chapter 4), neuroscientists are tackling questions like these: How does genetic makeup combine with specific experiences at various ages to influence development and organization of the brain? What transformations in the brain make it harder for adolescents and adults than for children to acquire a second language? What neurological changes are related to declines in speed of thinking, memory, and other aspects of cognitive processing in late adulthood?

A complementary new area, **developmental social neuroscience,** is devoted to studying the relationship between changes in the brain and emotional and social development. Developmental social neuroscience emerged later than its cognitive counterpart because techniques for measuring brain activity are hard to implement in most social situations, where children and adults must move freely to interact with others (Zelazo & Paus, 2010). When researchers started to tap more convenient neurobiological measures that are sensitive to psychological state, such as heart rate, blood pressure, and hormone levels detected in saliva, an explosion of social-neuroscience investigations followed.

Active areas of investigation in developmental social neuroscience include identification of the neural systems underlying infants' capacity to imitate others, adolescents' heightened risk-taking behavior, and individual differences in impulsivity, sociability, anxiety, aggression, and depression. One particularly energetic focus is the negative impact of extreme adversity, such as early rearing in deprived orphanages or child abuse and neglect, on brain development and cognitive, emotional, and social skills (Anderson & Beauchamp, 2013; Gunnar, Doom, &

A therapist encourages a 6-year-old with autism to master the alphabet and interact socially, giving her a high five for progress. Developmental social neuroscientists are intensely interested in identifying the neurological bases of autism and using those findings to devise effective interventions.

Esposito, 2015). Another burgeoning interest is uncovering the neurological bases of *autism*—the disrupted brain structures and networks that lead to the impaired social skills, language delays, and repetitive motor behavior of this disorder (Stoner et al., 2014). As these efforts illustrate, researchers are forging links between cognitive and social neuroscience, identifying brain systems that affect both domains of development.

Rapid progress in clarifying the types of experiences that support or undermine brain development at diverse ages is contributing to effective interventions for enhancing cognitive and social functioning. Today, researchers are examining the impact of various training and treatment techniques on both brain functioning and behavior (Johnson & de Haan, 2015; Lustig & Lin, 2016). Although much remains to be discovered, developmental neuroscience is broadening our understanding of development and yielding major practical applications throughout the lifespan.

Nevertheless, neuroscience research has so captivated the field that it poses the risk that brain properties underlying human behavior will be granted undue importance over powerful environmental influences, such as parenting, education, and economic inequalities in families and communities. Although most neuroscientists are mindful of the complex interplay among heredity, individual experiences, and brain development, their findings have too often resulted in excessive emphasis being placed on biological processes (Kagan, 2013b).

Fortunately, an advantage of having many theories is that they encourage researchers to attend to previously neglected dimensions of people's lives. The final three perspectives we will discuss focus on *contexts* for development. The first of these views emphasizes that the environments to which humans have been exposed over their long evolutionary history influences the development of many capacities.

Ethology and Evolutionary Developmental Psychology

Ethology is concerned with the adaptive, or survival, value of behavior and its evolutionary history. Its roots can be traced to the work of Darwin. Two European zoologists, Konrad Lorenz and Niko Tinbergen, laid its modern foundations. Watching diverse animal species in their natural habitats, Lorenz and Tinbergen observed behavior patterns that promote survival. The best known of these is *imprinting*, the early following behavior of certain baby birds, such as geese, that ensures that the young will stay close to the mother and be fed and protected from danger. Imprinting takes place during an early, restricted period of development (Lorenz, 1952). If the mother goose is absent during this time but an object resembling her in important features is present, young goslings may imprint on it instead.

Observations of imprinting led to a major concept in human development: the *critical period*. It is a limited time span during which the individual is biologically prepared to acquire certain adaptive behaviors but needs the support of an appropriately stimulating environment. Many researchers have investigated whether complex cognitive and social behaviors must be learned during certain time periods. For example, if children are deprived of adequate food or physical and social stimulation during their early years, will their intelligence be impaired? If language is not mastered in early childhood, is the child's capacity to acquire it reduced?

In later chapters, we will see that the term *sensitive period* applies better to human development than the strict notion of a critical period (Knudsen, 2004). A **sensitive period** is a time that is biologically optimal for certain capacities to emerge because the individual is especially responsive to environmental influences. However, its boundaries are less well-defined than those of a critical period. Development can occur later, but it is harder to induce.

Ethology focuses on the adaptive, or survival, value of behavior and on similarities between human behavior and that of other species, especially our primate relatives. Observing this chimpanzee mother cuddling her infant helps us understand the human caregiver–infant relationship.