

# DEVELOPMENT THROUGH THE LIFESPAN, 4/e

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ISBN: 0-205-49125-1

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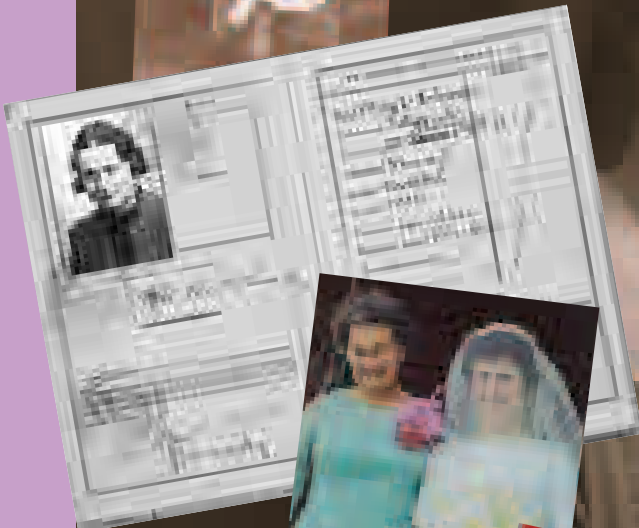
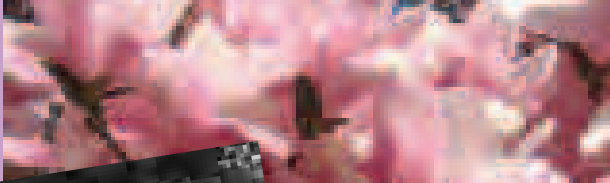
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## S A M P L E C H A P T E R 1

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**T**his photo essay chronicles the life course and family legacy of Sofie Lentschner. It begins in 1908 with Sofie's infancy and concludes in 2005, 35 years after Sofie's death, with her young adult grandsons, Peter and David. For a description of each photo, see the legend on page 000.

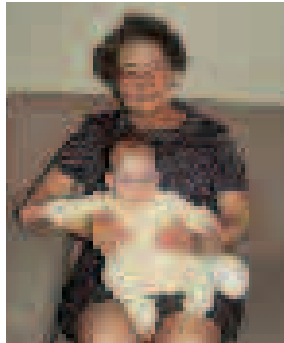
PHOTOS COURTESY OF LAURA E. BERK

# History, Theory, and Research Strategies

**S**ofie 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 was 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 sound.

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 her schoolwork, especially in mastering the foreign languages that were 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 the 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 the slave labor and death camps at Auschwitz-Birkenau. In 1939, as anti-Jewish laws and atrocities intensified, Sofie's family fled to the United States.



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## Chapter 1

### *Human Development as a Scientific, Applied, and Interdisciplinary Field*

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#### **Ethics in Lifespan Research**

As Sofie turned 30, her parents concluded she would never marry and would need a career for financial security. They agreed to support her return to school, and Sofie earned two master's degrees, one



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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 6 months they married. During the next 4 years, two daughters and a son were born. Soon Sofie's father became ill. The strain of uprooting

his family and losing his home and business had shattered his health. After months of being bedridden, he died of heart failure.

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 and parenting took less time, she returned to school once more, this time to earn a teaching credential. Finally, at age 50, she launched a career. For the next decade, Sofie taught 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 first-hand 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. As she and Philip were released from the financial burden of paying for their children's college education, they looked forward to greater leisure. Their affection and respect for one another 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 5 more years. Despite the exhaustion of chemotherapy, Sofie maintained a full schedule of teaching duties and continued to visit and run errands for her elderly mother. But as she weakened physically, she no longer had the stamina to meet her classes. Gradually, she gave in to the ravaging illness. 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. She had granted each a memorable image of a woman of courage and caring.

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 to them 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 continue to teach today—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 second-grade teacher of

mostly immigrant children. Peter, a lawyer, shares his grandmother's love of music, playing violin, viola, and mandolin in his spare time. Sofie also had a lifelong impact on many of her students. Recently, a professor of human development wrote to Laura:

I have been meaning to contact you for a while. I teach a class in lifespan development. When I opened the textbook and saw the pictures of your mother, I was very surprised. From 1962 to 1966, I took high school German classes from your mother. . . . 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 foreign languages and her delayed entry into marriage, parenthood, and career—affect development?
- What factors—both personal and environmental—led Sofie to die sooner than expected?

These are central questions addressed by **human development**, a field of study devoted to understanding constancy and change throughout the lifespan. Great diversity characterizes the interests and concerns of investigators who study human development. But all share a single goal: to identify those factors that influence consistencies and transformations in people from conception to death.

## Human Development as a Scientific, Applied, and Interdisciplinary Field

The questions just listed are not merely of scientific interest. Each has *applied*, or practical, importance as well. In fact, scientific curiosity is just one factor that led human development to become the exciting field of study 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 foster happy and successful lives for their children.

Our large storehouse of information about human development is *interdisciplinary*. It grew 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 just scientifically important but also relevant and useful.

### Basic Issues

Research on human development 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, 1998). 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 relationships throughout life.

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*. All theories must be tested using a fair set of research procedures agreed on by the scientific community, and findings must endure, or be replicated, over time.

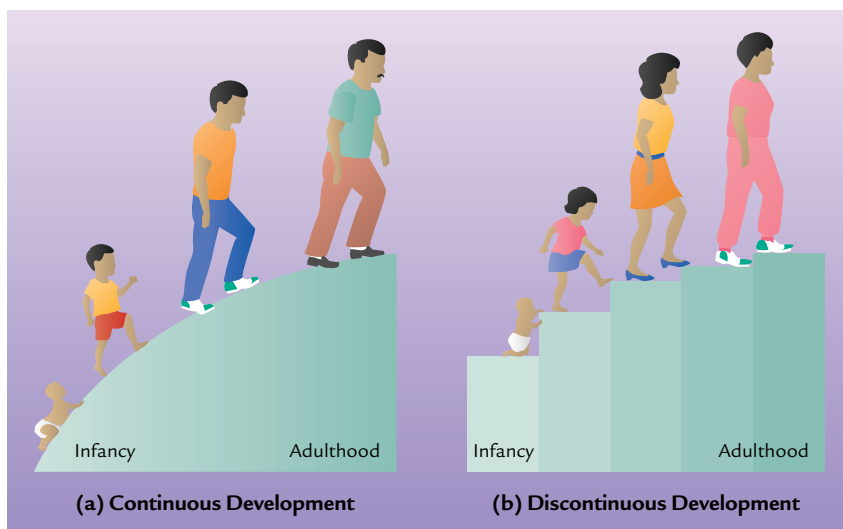
The field of human development contains many theories offering different ideas about what people are like and how they change. Humans are complex beings; they change physically, mentally, emotionally, and socially. And investigators do not always agree on the meaning of what they see. No single theory has been able to explain every aspect of human development. 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. We will return to each theory in greater detail, as well as introduce other important but less grand theories, in later chapters. Although there are many theories, we can easily organize them, since almost all take a stand 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) Are genetic or environmental factors more important in influencing development? Let's look closely at each of these issues.

## Continuous or Discontinuous Development?

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

■ **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 qualitatively different way.



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 sort objects into categories 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 change 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 adults'. If so, then development is **discontinuous**—a process in which new and different ways of understanding and responding to the world emerge at specific times. From this perspective, Sofie could not yet perceive, remember, and organize experiences as a mature person can. Rather, she moved through a series of developmental steps, each of which has 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 take place in a neat, orderly sequence of stages? In fact, this ambitious assumption has faced significant challenges. We will review some influential stage theories later in this chapter.

## 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 (Kagan, 2003). 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 result in markedly different intellectual capacities, social skills, and feelings about the self and others (Rogoff, 2003).

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 immediate settings, such as home, school, and neighborhood, as well as circumstances more remote from people's everyday lives—community resources, societal values, and historical time period. Finally, researchers have become increasingly conscious of cultural diversity in 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 inborn biological givens—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 at least some role 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 an inborn 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 tutor 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 do 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; Johnson, 2000; Sroufe, Egeland, & Kreutzer, 1990). Other theorists take a more optimistic view (Greenspan & Shanker, 2004; Masten & Reed, 2002; Nelson, 2002; Werner

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Early research on human development focused only on children. Since the 1960s, researchers have also investigated how adults develop over the life course. These three bird watchers, all in their seventies, continue to undergo important changes, physically, mentally, and socially. Their expressions convey the satisfactions and pleasures that many elders experience in the final decades.

& Smith, 2001). They emphasize *plasticity*—that change is possible and even likely if new experiences support it.

Throughout this book, we will see that investigators disagree, at times 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

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. Some contemporary theorists believe that both continuous and discontinuous changes occur. Some recognize that development has both universal features and features unique to the 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 (Huttenlocher, 2002; Reiss, 2003; Rutter, 2002).

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, the *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 five thousand years. In 1900, it was just under age 50; today, it is 77.7 years in the United States and 80.1 years in Canada. Life expectancy continues to increase; in North America, it is predicted to reach 84 years in 2050. Consequently, there are more older adults—a trend that characterizes most of the world but that is especially striking in industrialized nations. People age 65 and older accounted for about 4 percent of the North American population in 1900, 7 percent in 1950, and 13 percent in 2005 (Statistics Canada, 2005; U.S. Census Bureau, 2005).

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 and the factors that underlie it. Increasingly, researchers are envisioning *development as a dynamic system*—a perpetually ongoing process extending from conception to death that is molded by a complex network of biological, psychological, and social influences (Lerner, Theokas, & Bobek, 2005). A leading dynamic 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, 1998; 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. Instead, 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 on the following page for a description of each). Yet, as you are already aware from reading the first part of this chapter, these domains are not really distinct; they overlap and interact.

Every age period has its own agenda, its unique demands and opportunities that yield some 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.

**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 outside the womb.
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 begin to establish ties to peers.
Middle childhood	6–11 years	The school years are marked by advances in athletic abilities; logical thought processes; basic literacy skills; understanding of self, morality, and friendship; and 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 focus on defining personal values and goals and establishing autonomy from the family.
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 establishing 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 a spouse. They reflect on the meaning of their lives.



## Development Is Multidimensional and Multidirectional

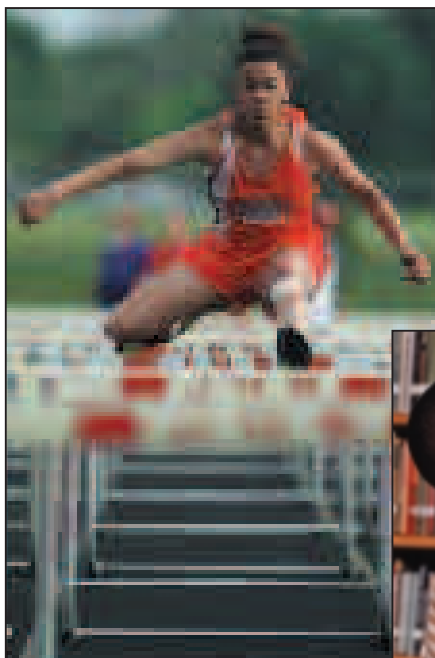
Think back to Sofie’s life and how she continually faced new demands and opportunities. From a lifespan perspective, the challenges and adjustments of development are *multidimensional*—affected by an intricate blend of biological, psychological, social forces.

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 (Freund & Baltes, 2000). 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 (Chazottes, 2004).

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 these examples, how the lifespan perspective includes both continuous and discontinuous change.

## Development Is Plastic

Lifespan researchers emphasize that development is plastic at all ages. For example, 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 to Sofie’s and Philip’s happiness, their relationship gradually became richer and more fulfilling. In Chapter 17, we will see that intellectual performance also remains flexible with advancing age. Elderly



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### Emotional and Social Development:

Changes in emotional communication, self-understanding, knowledge about other people, interpersonal skills, friendships, intimate relationships, and moral reasoning and behavior.

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

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



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

# 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 for the rest of childhood and adolescence 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 John's and Gary's 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 became 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 & Coatsworth, 1998). Why did

Gary “beat the odds” and come through unscathed?

New evidence on **resilience**—the ability to adapt effectively in the face of threats to development—is receiving increased attention because investigators want to find ways to protect young people from the damaging effects of stressful life conditions (Masten & Powell, 2003). 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 (Fergusson & Horwood, 2003; Garmezy, 1993; Masten et al., 1995; Werner & Smith, 2001). 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 biologically endowed characteristics can reduce exposure to risk or lead to experiences that compensate for early stressful events. High intelligence and socially valued tal-



This boy's special relationship with his grandmother promotes resilience. By providing social support, she helps him cope with stress and solve problems constructively.

ents (in music or athletics, for example) are protective factors. They 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 powerful. Children with easygoing, sociable dispositions have an optimistic outlook on life and a special capacity to adapt to change—qualities that elicit

people respond to special training with substantial (but not unlimited) gains in a wide variety of mental abilities (Nyberg, 2005; Thompson & Foth, 2005).

Evidence on plasticity makes it clear 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 (Lemme, 2006). 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. And as the Biology and Environment box above reveals, 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 ages 12 to 14, and (for women) experience menopause in their late forties or early fifties. These milestones are influenced by biology, but social customs can create age-graded influences as well. Starting school around age 6, getting a driver's license at age 16, and entering college around age 18 are good examples. 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.

positive responses from others. In contrast, emotionally reactive, irritable, and impulsive children often tax the patience of people around them (Masten & Reed, 2002; Masten et al., 1999). 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. But note that this factor (as well as the next one) is not independent of children's personal characteristics. Children who are relaxed, 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, some children may develop more attractive dispositions as a result of parental warmth and attention (Conger & Conger, 2002).

**Social Support Outside the Immediate Family.** The most consistent asset of resilient children is a strong bond to a

competent, caring adult, who need not be a parent. A grandparent, aunt, uncle, or teacher who forms a special relationship with the child can promote resilience (Masten & Reed, 2002). 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 school achievement are also linked to resilience. But children who have positive relationships with adults are far more likely to establish these supportive peer ties.

**Community Resources and Opportunities.** Community supports—good 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 a result, participants gain in self-esteem, responsibility, and community commitment. As a high school student, Gary volunteered for Habitat for Humanity, a nonprofit organization that builds affordable housing in low-income neighborhoods. Community involvement offered Gary opportunities to form meaningful relationships and develop new competencies, which further strengthened his resilience (Seccombe, 2002).

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

Nevertheless, when many risks pile up, they are increasingly difficult to overcome (Quyen et al., 1998). Therefore, interventions must reduce risks and enhance relationships at home, in school, and in the community that protect young people against the negative effects of risk. This means attending to both the person and the environment—strengthening the individual's capacities as well as fixing problems.

■ **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, such as the introduction of television, computers, and the Internet; and changing cultural values, such as revised attitudes toward women and ethnic minorities. These **history-graded influences** explain why people born around the same time—called a *cohort*—tend to be alike in ways that set them apart from people born at other times.

■ **Nonnormative Influences.** *Normative* means typical, or average. Age-graded and history-graded influences are normative 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 were

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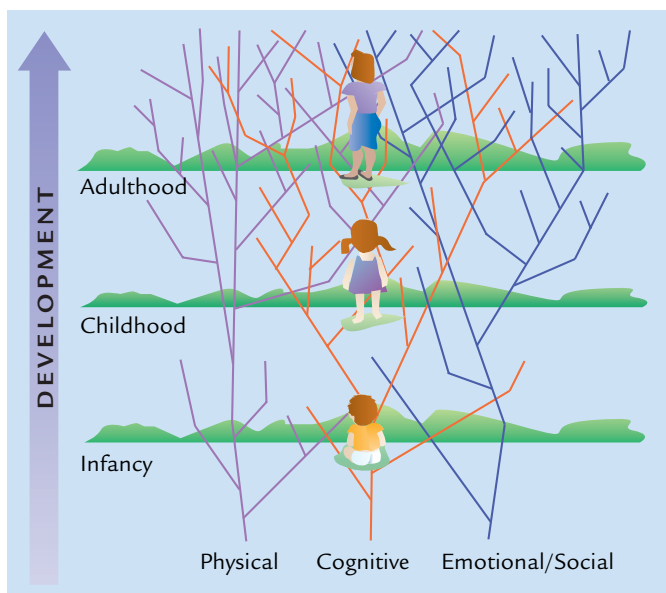


For these 5- and 6-year-olds, starting kindergarten marks a major life transition. In industrialized nations, the first day of school is an *age-graded influence*—one that occurs at about the same age for most children.

piano lessons in childhood with an inspiring teacher; a blind date with Philip; delayed marriage, parenthood, and career entry; and a battle with cancer. Because they occur haphazardly, 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.

Lifespan investigators point out that nonnormative influences have become more powerful and age-graded influences less so in contemporary adult development. Compared with Sofie's era, today the ages at which people finish their education, enter careers, get married, have children, and retire are much more diverse. Indeed, Sofie's "off-time" accomplishments would have been less unusual had she been born a generation or two later! Age remains a powerful organizer of everyday experiences, and age-related expectations have certainly not 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 fibers extending in diverse directions, which may undergo both continuous and stagewise transformations (see Figure 1.3). Now let's turn to the historical foundations of the field as a prelude to major theories that address various aspects of change.



**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 potential 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.

## Ask Yourself

### Review

Distinguish among age-graded, history-graded, and nonnormative influences on lifespan development. Cite an example of each in Sofie's story at the beginning of this chapter.

### Apply

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

### Connect

What stand does the lifespan perspective take on the issue of *one course of development or many*? How about the relative influence of *nature and nurture*? 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 diversity in development.

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## Historical Foundations

Contemporary theories of human development are the result of centuries of change in Western cultural values, philosophical thinking, and scientific progress. To understand the field as it exists today, we must return to its beginnings—to influences that long preceded scientific study. We will see that many early ideas linger on as important forces in current theory and research.

### Philosophies of Childhood

As early as medieval Europe (the sixth through the fifteenth centuries), childhood was regarded as a separate period from adulthood. Medieval painters often depicted children in loose, comfortable gowns while playing games and looking up to adults. Written texts contained terms that distinguished children from other people, and manuals offering advice on child care, including health, feeding, clothing, and games, had become common by the fourteenth century (Alexandre-Bidon & Lett, 1997). Laws recognized that children needed protection from people who might mistreat them, and courts exercised leniency with lawbreaking youths because of their tender years. Medieval religious writings, however, contained contradictory beliefs about children's basic nature, sometimes portraying them as possessed by the devil and in need of purification, at other times as innocent and close to angels (Hanawalt, 2003). Both ideas foreshadowed later views of childhood.

In the sixteenth century, the Puritan belief in original sin gave rise to a view of children as inherently evil and stubborn. Harsh, restrictive parenting practices were recommended as the most efficient means of taming the depraved child. Although a punitive approach was the prevailing child-rearing philosophy, affection for their children prevented most Puritan parents from using extremely repressive measures. Instead, they tried to teach their sons and daughters to use reason to distinguish right from wrong (Clarke-Stewart, 1998). As they trained their children in self-reliance and self-control, Puritan parents gradually adopted a moderate balance between severity and permissiveness.

■ **John Locke.** The philosophies of the seventeenth-century Enlightenment emphasized ideals of human dignity and respect. The writings of British philosopher John Locke (1632–1704) served as the forerunner of a twentieth-century perspective that we will discuss shortly: behaviorism. Locke viewed the child as a **tabula rasa**—Latin for “blank slate.” According to this idea, children are, to begin with, nothing at all; their characters are shaped by experience. Locke (1690/1892) described parents as rational tutors who can mold the child in any way they wish through careful instruction, effec-

tive example, and rewards for good behavior. His philosophy led to a change from harshness toward children to kindness and compassion.

Look carefully at Locke’s ideas, and you will see that he regarded development as *continuous*: Adultlike behaviors are gradually built up through the warm, consistent teachings of parents. His view of the child as a *tabula rasa* led him to champion *nurture*—the power of the environment to shape the child. And his faith in nurture suggests the possibility of *many courses of development* and of *change at later ages* due to new experiences. Finally, in Locke’s philosophy, children did little to shape their own destiny, which was written on blank slates by others. This vision of a passive child has been discarded. All contemporary theories view developing individuals as active, purposeful beings who contribute substantially to their own development.

■ **Jean-Jacques Rousseau.** In the eighteenth century, French philosopher Jean-Jacques Rousseau (1712–1778) claimed that children are not blank slates to be filled by adult instruction. Instead, Rousseau (1762/1955) viewed children as **noble savages**, naturally endowed with a sense of right and wrong and with an innate plan for orderly, healthy growth. Unlike Locke, Rousseau thought children’s built-in moral sense and unique ways of thinking and feeling would only be harmed by adult training. His was a child-centered philosophy in which adults should be receptive to children’s needs at each of four stages: infancy, childhood, late childhood, and adolescence.

Rousseau’s philosophy includes two influential concepts: (1) *stage*, which we discussed earlier in this chapter, and (2) **maturation**, which refers to a genetically determined, naturally unfolding course of growth. Unlike Locke, Rousseau saw children as determining their own destinies. And he saw development as a *discontinuous, stagewise* process that follows a *single, unified course* mapped out by *nature*.

## Philosophies of Adulthood and Aging

Soon after Rousseau devised his conception of childhood, the first lifespan views appeared. In the eighteenth and early nineteenth centuries, two German philosophers—John Nicolaus Tetens (1736–1807) and Friedrich August Carus (1770–1808)—urged that attention to development be extended through adulthood. Each asked important questions about aging.

Tetens (1777) addressed the origins and extent of individual differences, the degree to which behavior can be changed in adulthood, and the impact of historical eras on the life course. He was ahead of his time in recognizing that older people can compensate for intellectual declines that, at times, may reflect hidden gains. For example, Tetens suggested that some memory difficulties are due to searching for a word or name among a lifetime of accumulated information—a possibility acknowledged by current research (Perfect & Maylor, 2000).

Carus (1808) moved beyond Rousseau’s stages by identifying four periods that span the life course: childhood, youth,



As early as medieval times, adults viewed childhood as a distinct developmental period and were sensitive to children’s needs. The children in this fourteenth-century image, painted in a book of songs, are dressed in loose, comfortable gowns as they play a lively game of Blind Man’s Bluff in a garden.

adulthood, and senescence. Like Tetens, Carus viewed aging not only as decline but also as progression. His writings reflect a remarkable awareness of multidirectionality and plasticity, which are at the heart of the lifespan perspective.

## Scientific Beginnings

The study of development evolved quickly during 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*.

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 not well suited to their environments. Individuals within a species who best meet the survival requirements of the environment 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 observation that the development of the human child follows the same general plan as the evolution 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 (1846–1924), one of the most influential American psychologists of the early twentieth century, is generally regarded as the founder of the child study movement (Hogan, 2003). 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 genetically determined process that unfolds 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 con-



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Darwin's theory of evolution emphasizes the adaptive value of physical characteristics and behavior. Affection and care in families is adaptive throughout the lifespan, promoting survival and psychological well-being. Here a daughter helps her elderly mother with medication.

structed elaborate questionnaires asking children of different ages almost everything they could tell about themselves—interests, fears, imaginary playmates, dreams, friendships, everyday knowledge, and more. And through careful observations and interviews with parents, Gesell collected detailed normative information on infants' and children's motor achievements, social behaviors, and personality characteristics.

Gesell was also among the first to make knowledge about child development meaningful to parents. 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, in the tradition of Rousseau, recommended sensitivity to children's cues (Thelen & Adolph, 1992). 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 to find a way to identify children with learning problems who needed to be placed in special classes. To address these practical educational concerns, they constructed the first successful intelligence test.

In 1916, Binet's test was adapted for use with English-speaking children at Stanford University. 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.

## Ask Yourself

### Review

Explain how central assumptions of the lifespan perspective are reflected in Tetens's and Carus's philosophies of adulthood and aging.

### Apply

Imagine a debate between John Locke and Jean-Jacques Rousseau on the nature–nurture controversy. Summarize the argument each historical figure would be likely to present.

### Connect

What do the ideas of Rousseau, Darwin, and Hall have in common?

### Reflect

Find out whether your parents read child-rearing advice books when you were growing up. What questions most concerned them? Do you think the concerns of today's parents differ from those of your parents? Explain.

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## Mid-Twentieth-Century Theories

In the mid-twentieth century, human development expanded into a legitimate discipline. As it attracted increasing interest, a variety of theories emerged, each of which continues to have followers today.

### 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 did people become the way they are? To treat psychological problems, psychiatrists and social workers turned to an 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. The way these conflicts are resolved determines the individual's ability to learn, to get along with others, and to cope with anxiety. Although many individuals 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. On

the basis of these recollections, he examined the unconscious motivations of his patients and constructed his **psychosexual theory**, which emphasized that how parents manage their child's sexual and aggressive drives in the first few years is crucial for healthy personality development.

**Three Parts of the Personality.** In Freud's theory, three parts of the personality—id, ego, and superego—become integrated during five stages, summarized in Table 1.2 on page 16. 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 on appropriate objects at acceptable times and places. For example, aided by the ego, the hungry baby stops crying when he sees his mother preparing to feed him. And the more competent preschooler gets a snack from the kitchen on her own.

Between 3 and 6 years of age, the *superego*, or conscience, develops through interactions with parents, who 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 (Freud, 1923/1974). For example, when the ego is tempted to gratify an id impulse by hitting a playmate to get an attractive toy, the superego may warn that such behavior is wrong. The ego must decide which of the two forces (id or superego) will win this inner struggle, or it must work out a compromise, such as asking for a turn with the toy. According to Freud, the relations established among the id, ego, and superego during the preschool years determine the individual's basic personality.

**Psychosexual Development.** 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, then children grow into well-adjusted adults with the capacity for mature sexuality 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 theory 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, it did not apply in cultures differing from nineteenth-century Victorian society. 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 of these neo-Freudians is Erik Erikson (1902–1994).

Although Erikson (1950) accepted Freud's basic psychosexual framework, he expanded the picture of development at each stage. In his **psychosocial theory**, Erikson emphasized that the ego does not just mediate between id impulses and superego demands. At each stage, it also acquires attitudes and

**Table 1.2** Freud's Psychosexual Stages

Psychosexual Stage	Period of Development	Description
Oral	Birth–1 year	The new ego directs the baby's sucking activities toward breast or bottle. If oral needs are not met appropriately, the individual may develop such habits as thumb sucking, fingernail biting, and pencil chewing in childhood and overeating and smoking in later life.
Anal	1–3 years	Toddlers and preschoolers enjoy holding and releasing urine and feces. Toilet training becomes a major issue between parent and child. If parents insist that children be trained before they are ready, or if they make too few demands, conflicts about anal control may appear in the form of extreme orderliness and cleanliness or messiness and disorder.
Phallic	3–6 years	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 each time they violate its standards.
Latency	6–11 years	Sexual instincts die down, and the superego develops further. The child acquires new social values from adults and same-sex peers outside the family.
Genital	Adolescence	With puberty, the sexual impulses of the phallic stage reappear. If development has been successful during earlier stages, it leads to marriage, mature sexuality, and the birth and rearing of children. This stage extends through adulthood.

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Erik Erikson believed that child rearing can be understood only in relation to the competencies valued and needed by the individual's society. This boy fishing with his father in the Inle Lake in Myanmar is learning skills that he will need as an adult in his culture.

skills that make the individual an active, contributing member of society. A basic psychological conflict, which is resolved along a continuum from positive to negative, determines healthy or maladaptive outcomes at each stage. As Table 1.3 on the following page shows, Erikson's first five stages parallel Freud's stages, but Erikson added three adult stages.

Finally, 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 babies of breastfeeding for the first 10 days after birth and instead fed them a thin soup. At age 6 months, infants were abruptly weaned—if necessary, by having the mother leave for a few days. These experiences, from our cultural vantage point, might seem cruel. But Erikson explained that the Yurok lived in a world in which salmon filled the river just once a year, a circumstance requiring considerable self-restraint for survival. In this way, he showed that child rearing can be understood only in relation to the competencies valued and needed by the individual's society.

#### Contributions and Limitations of Psychoanalytic Theory.

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 the clinical method further at the end of this chapter.) Psychoanalytic theory has also inspired a wealth of research on many



Table 1.3

## Erikson's Psychosocial Stages, with Corresponding Psychosexual Stages Indicated

Psychosocial Stage	Period of Development	Description
Basic trust versus mistrust (Oral)	Birth–1 year	From warm, responsive care, infants gain a sense of trust, or confidence, that the world is good. Mistrust occurs when infants have to wait too long for comfort and are handled harshly.
Autonomy versus shame and doubt (Anal)	1–3 years	Using new mental and motor skills, children want to choose and decide for themselves. Autonomy is fostered when parents permit reasonable free choice and do not force or shame the child.
Initiative versus guilt (Phallic)	3–6 years	Through make-believe play, children explore the kind of person they can become. Initiative—a sense of ambition and responsibility—develops when parents support their child's new sense of purpose. When parents demand too much self-control, they induce excessive guilt.
Industry versus inferiority (Latency)	6–11 years	At school, children develop the capacity to work and cooperate with others. Inferiority develops when negative experiences at home, at school, or with peers lead to feelings of incompetence.
Identity versus role confusion (Genital)	Adolescence	The adolescent tries to answer the question, Who am I, and what is my place in society? By exploring values and vocational goals, the young person forms a personal identity. The negative outcome is confusion about future adult roles.
Intimacy versus isolation	Early adulthood	Young adults work on establishing intimate ties to others. Because of earlier disappointments, some individuals cannot form close relationships and remain isolated.
Generativity versus stagnation	Middle adulthood	Middle-aged adults contribute to the next generation through child rearing, caring for other people, or productive work. The person who fails in these ways feels an absence of meaningful accomplishment.
Ego integrity versus despair	Late adulthood	Elders reflect on the kind of person they have been. Integrity results from feeling that life was worth living as it happened. Those who are dissatisfied with their lives fear death.



Erik Erikson

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 the clinical approach that they failed to consider other methods. In addition, many psychoanalytic ideas, such as psychosexual stages and ego functioning, are so vague that they are difficult or impossible to test empirically (Crain, 2005; Thomas, 2005).

Nevertheless, Erikson's broad outline of lifespan change captures the essence of personality development during each major period of the life course, so we will return to it in later chapters. We will also encounter perspectives inspired by Erikson's theory that clarify the attainments of early, middle, and late adulthood and that are within the tradition of stage models of psychosocial development (Levinson, 1978, 1996; Vaillant, 1977, 2002).

## Behaviorism and Social Learning Theory

As psychoanalytic theory gained in prominence, human 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 psychologist John Watson (1878–1958). He rejected the psychoanalytic concern with the unseen workings of the mind. Instead, he 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). As a result of this association, the neutral stimulus 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 turn his head away when he caught 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. Consistent with Locke's *tabula rasa*, Watson concluded that environment is the supreme force in development. Adults can mold children's behavior, he thought, by carefully controlling stimulus–response associations. And development is a continuous process, consisting of a gradual increase in the number and strength of these associations.

Another form of behaviorism is 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. It can also be 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 conditioning techniques further in Chapter 4.

■ **Social Learning Theory.** Psychologists quickly became interested in whether behaviorism might explain the development of social behavior better than the less precise concepts of psychoanalytic theory. This sparked the emergence of approaches that built on the principles of conditioning, offering expanded views of how children and adults acquire new responses.

Several kinds of **social learning theory** emerged. The most influential, devised by Albert Bandura, 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. By the 1950s, social learning theory had become a major force in developmental research.

Bandura's work continues to influence much research on social development. Today, however, like the field of human development as a whole, 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.

According to 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, 1999, 2001). For example, imagine a parent who often remarks, “I’m glad I kept working on that task, even though it was hard,” who explains the value of persistence, and who encourages it by saying, “I know you can do a good job on that homework!” Soon the child starts to view himself as hard-working 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. **Behavior modification** consists of procedures that combine conditioning and modeling to eliminate undesirable behaviors and increase desirable responses. It has been used to relieve a difficulties in children and adults, such as persistent aggression, language delays, and extreme fears (Conyers et al., 2004; Wolpe & Plaud, 1997).

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. Finally, behaviorism and social learning theory have been criticized for neglecting people's contributions to their own development. In emphasizing cognition, Bandura is unique among theorists whose work grew out of the behaviorist tradition in granting children and adults an active role in their own learning.

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Social learning theory recognizes that children acquire many skills through modeling. By observing and imitating her mother's behavior, this Vietnamese preschooler is becoming a skilled user of chopsticks.

## 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. Not until the 1960s, however, did they grant it much attention, mainly because Piaget's ideas were at odds with behaviorism, which dominated North American psychology in the mid-twentieth century (Zigler & Gilman, 1998). 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 faulty logic. For example, children younger than age 7 commonly say that the amount of a liquid changes when it is poured into a differently 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 1.4 on page 20 provides a brief description of Piaget's stages. In the *sensorimotor stage*, cognitive development begins 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*. Next comes the *concrete operational stage*, when cognition is transformed into the more organized reasoning of the school-age child. Finally, in the *formal operational stage*, thought becomes the complex, abstract reasoning system of the adolescent and adult.

■ **Piaget's Methods of Study.** Piaget devised special methods for investigating how children think. Early in his career, he carefully observed his three infant children and also 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. In studying childhood and adolescent thought, Piaget took advantage of children's ability to describe their thinking. Adapting the clinical method of psychoanalysis, he conducted 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.

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In Piaget's concrete operational stage, school-age children think in an organized, logical fashion about concrete objects. This 6-year-old girl and 7-year-old boy understand that the amount of milk remains the same after being poured into a differently shaped container, even though its appearance changes.

■ **Contributions and Limitations of Piaget's Theory.** Piaget's cognitive-developmental perspective 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. Practically speaking, 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. Furthermore, many studies show that children's performance on Piagetian problems can be improved with training. This finding calls into question his assumption that discovery learning rather than adult teaching is the best way to foster development (Klahr & Nigam, 2004). Critics also point out that Piaget's stagewise account pays insufficient attention to social and cultural influences on development. Finally, some lifespan theorists disagree with Piaget's conclusion that no major cognitive changes occur after adolescence. Several have proposed important transformations in adulthood (Arlin, 1989; Labouvie-Vief, 1985; Perry, 1981).

Today, the field of human development is divided over its loyalty to Piaget's ideas. Those who continue to find merit in Piaget's stage approach accept a modified view—one in which changes in thinking take place more gradually than Piaget

Table 1.4

## 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 simple problems, such as pulling a lever to hear the sound of a music box, finding hidden toys, and putting objects in 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. 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, thinking falls short of adult intelligence. It is not yet abstract.
Formal operational	11 years on	The capacity for abstraction permits adolescents to reason with symbols that do not refer to objects in the real world, as in advanced mathematics. They can also think of all possible outcomes in a scientific problem, not just the most obvious ones.



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Jean Piaget

believed (Case, 1998; Demetriou et al., 2002; Fischer & Bidell, 1998). Others 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.

## Recent Theoretical Perspectives

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

### 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** (Klahr & MacWhinney, 1998). 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 use flowcharts to map the precise series of 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.” Let’s look at an example to clarify the usefulness of this approach. 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

## Ask Yourself

### Review

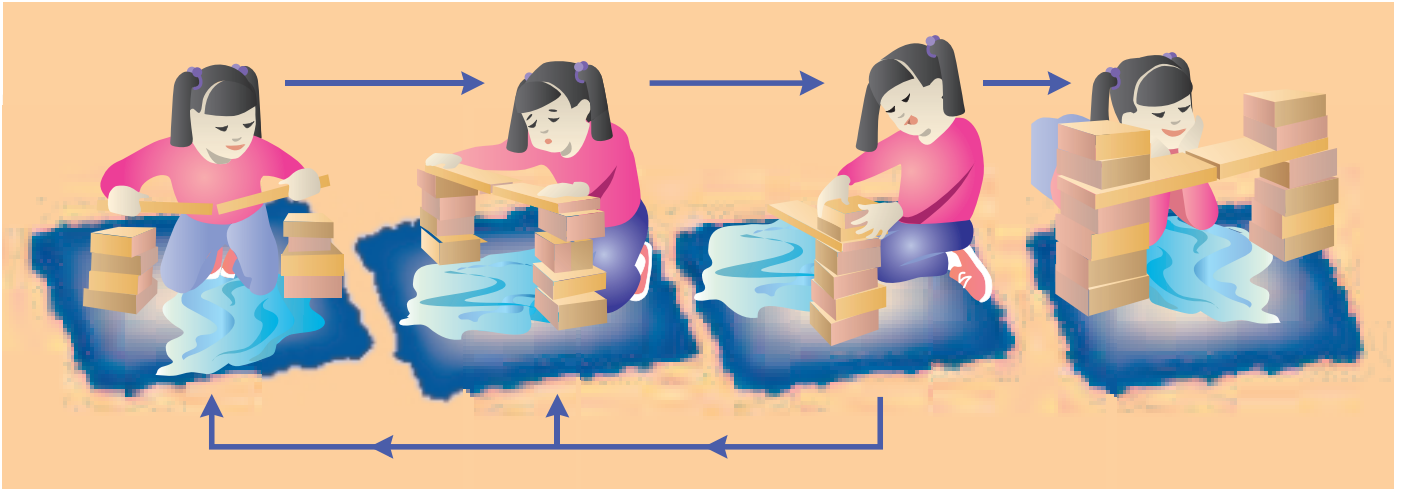
What aspect of behaviorism made it attractive to critics of psychoanalytic theory? How did Piaget’s theory respond to a major limitation of behaviorism?

### 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?

### 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.



■ **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. (Adapted from Thornton, 1999.)

to span (Thornton, 1999). Figure 1.4 shows one solution to the problem: 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 children’s mastery of one or a few tasks. Others describe the human cognitive system as a whole (Atkinson & Shiffrin, 1968; Lockhart & Craik, 1990). 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 adults? Are declines in memory during old age evident on all types of tasks or only some?

Like Piaget’s cognitive-developmental theory, the information-processing approach regards people as active, sense-making beings (Halford, 2002). But unlike Piaget’s theory, it does not divide development into stages. Rather, the thought processes studied—perception, attention, memory, planning strategies, categorization of information, and comprehension of written and spoken prose—are regarded as similar at all ages but present to a lesser or greater extent. Therefore, the 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 (Siegler, 1998). But information processing has fallen short in some respects. Although good at analyzing thinking into its components, information processing has had difficulty putting them back together into a comprehensive theory. In addition, this approach all but ignores aspects of cognition that are not linear and logical (Birney et al., 2005). Furthermore, much information-processing research has been conducted in laboratories rather than in real-life situations. Recently, investigators have addressed this concern by studying conversations, stories, memory for everyday events, and academic problem solving.

Over the past two decades, information-processing research has expanded in another way: A new area of investigation has arisen, 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 activity within the brain while children and adults perform various tasks have greatly enhanced knowledge of relationships between brain functioning and behavior (Cabeza, Nyberg, & Park, 2005; Johnson, 2005). Armed with these brain-imaging techniques (which we will consider in Chapter 4), neuroscientists are tackling questions like these: How do early experiences influence the growth and organization of the young child’s 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 old age?

During the first five years, the brain is highly plastic—especially open to growth as a result of experience. But it retains considerable plasticity throughout life. Neuroscientists are making rapid progress in identifying the types of experiences to which the brain is sensitive at various ages. They are also clarifying the brain bases of many learning and behavior disorders, and they are contributing to the design of effective interventions by examining their impact on both behavior and brain functioning (Munakata, Casey, & Diamond, 2004). Although much remains to be discovered, developmental cognitive neuroscience is already transforming our understanding of development and yielding major practical applications throughout the lifespan.

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 development of many capacities is influenced by our long evolutionary history.

## Ethology and Evolutionary Developmental Psychology

**Ethology** is concerned with the adaptive, or survival, value of behavior and its evolutionary history (Hinde, 1992). 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. 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 (Lorenz, 1952).

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 capacity to acquire it reduced?

In later chapters, we will see that the term *sensitive period* applies better to human development than does the strict notion of a critical period (Bornstein, 1989). A **sensitive period** is a time that is optimal for certain capacities to emerge and in which 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.

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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 mother cuddling her 8-day-old infant helps us understand the human–infant caregiver relationship.

Inspired by observations of imprinting, British psychoanalyst John Bowlby (1969) applied ethological theory to the understanding of the human infant–caregiver relationship. He argued that infant smiling, babbling, grasping, and crying are built-in social signals that encourage the caregiver to approach, care for, and interact with the baby. By keeping the parent near, these behaviors help ensure that the infant will be fed, protected from danger, and provided with stimulation and affection necessary for healthy growth. The development of attachment in humans is a lengthy process that leads the baby to form a deep affectionate tie with the caregiver (van den Boom, 2002). Bowlby believed that this bond has lifelong consequences for human relationships. In later chapters, we will consider research that evaluates this assumption.

Observations by ethologists have shown that many aspects of social behavior, including emotional expressions, aggression, cooperation, and social play, resemble those of our primate relatives. Recently, researchers have extended this effort in a new area of research called **evolutionary developmental psychology**. It seeks to understand the adaptive value of specieswide cognitive, emotional, and social competencies as those competencies change with age. Evolutionary developmental psychologists ask such questions as: What role does the newborn’s visual preference for facelike stimuli play in survival? Does it support older infants’ capacity to distinguish familiar caregivers from unfamiliar people? Why do children play in sex-segregated groups? What do they learn from such play that might lead to adult gender-typed behaviors, such as male dominance and female investment in caregiving?

As these examples suggest, evolutionary psychologists are not just concerned with the biological basis of development. They realize that humans' large brain and extended childhood resulted from the need to master an increasingly complex social and technological environment, so they are also interested in learning (Blasi & Bjorklund, 2003). The evolutionary selection benefits of behavior are believed to be strongest in the first half of life—to ensure survival, reproduction, and effective parenting. As people age, social and cultural factors become increasingly important in promoting and maintaining high levels of functioning (Smith & Baltes, 1999; Staudinger & Lindenberger, 2003). The next contextual perspective we will discuss, Vygotsky's sociocultural theory, serves as an excellent complement to ethology because it highlights social and cultural contexts for development.

### Vygotsky's Sociocultural Theory

The field of human development has recently seen a dramatic increase in studies addressing the cultural context of people's lives. Investigations that make comparisons across cultures, and among ethnic groups within cultures, provide insight into whether developmental pathways apply to all people or are limited to particular environmental conditions (Cole, 2005). As a result, cross-cultural and multicultural research helps us untangle the contributions of biological and environmental factors to the timing, order of appearance, and diversity of children's and adults' behaviors.

In the past, cross-cultural studies focused on broad cultural differences in development—for example, whether children in one culture are more advanced in motor development or do better on intellectual tasks than children in another. However, this approach can lead us to conclude incorrectly that some cultures are superior to others in enhancing development. In addition, it does not help us understand the precise experiences that contribute to cultural differences in behavior.

Today, more research is examining the relationship of *culturally specific beliefs and practices* to development. The contributions of Russian psychologist Lev Vygotsky (1896–1934) have played a major role in this trend. Vygotsky's (1934/1987) perspective, called **sociocultural theory**, focuses on how *culture*—the values, beliefs, customs, and skills of a social group—is transmitted to the next generation. According to Vygotsky, *social interaction*—in particular, cooperative dialogues with more knowledgeable members of society—is necessary for children to acquire the ways of thinking and behaving that make up a community's culture (Rowe & Wertsch, 2002). Vygotsky believed that as adults and more expert peers help children master culturally meaningful activities, the communication between them becomes part of children's thinking. As children internalize the essential features of these dialogues, they can use the language within them to guide their own thought and actions and to acquire new skills (Berk, 2003).

Vygotsky's theory has been especially influential in the study of cognitive development. Vygotsky agreed with Piaget that children are active, constructive beings. But unlike Piaget,

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Through her grandmother's guidance, a Navajo girl learns to use a vertical weaving loom. According to Vygotsky's sociocultural theory, social interaction between children and more knowledgeable members of their culture leads to ways of thinking and behaving essential for success in that culture.

who emphasized children's independent efforts to make sense of their world, Vygotsky viewed cognitive development as a *socially mediated process*—dependent on the support that adults and more mature peers provide as children try new tasks.

In Vygotsky's theory, children undergo certain stagewise changes. For example, when they acquire language, their ability to participate in dialogues with others is greatly enhanced, and mastery of culturally valued competencies surges forward. When children enter school, they spend much time discussing language, literacy, and other academic concepts—experiences that encourage them to reflect on their own thinking. As a result, they gain dramatically in reasoning and problem solving.

Although most research inspired by Vygotsky's theory focuses on children, his ideas apply to people of any age. A central theme is that cultures select tasks for their members, and social interaction surrounding those tasks leads to competencies essential for success in a particular culture. For example, in industrialized nations, teachers help people learn to read, drive a car, or use a computer. Among the Zinacanteco Indians of southern Mexico, adult experts guide young girls as they master complicated weaving techniques (Greenfield, Maynard, & Childs, 2000). In Brazil, child candy sellers with little or no schooling develop sophisticated mathematical abilities as the result of buying candy from wholesalers, pricing it in collaboration with adults and experienced peers, and bargaining with customers on city streets (Saxe, 1988).

Research stimulated by Vygotsky's theory reveals that people in every culture develop unique strengths. But his emphasis on culture and social experience led Vygotsky to neglect the biological side of development. Although he recognized the

importance of heredity and brain growth, he said little about their role in cognitive change. Furthermore, Vygotsky's emphasis on social transmission of knowledge meant that he placed less emphasis than other theorists on children's capacity to shape their own development. Followers of Vygotsky grant the individual and society more balanced roles (Karpov, 2005; Rogoff, 1998, 2003).

## Ecological Systems Theory

Urie Bronfenbrenner is responsible for an approach to human development that has moved to the forefront of the field because it offers the most differentiated and complete account of contextual influences on development. **Ecological systems theory** views the person as developing within a complex *system* of relationships affected by multiple levels of the surrounding environment. Since the child's biologically influenced dispositions join with environmental forces to mold development, Bronfenbrenner recently characterized his perspective as a *bioecological model* (Bronfenbrenner & Evans, 2000).

Bronfenbrenner envisions the environment as a series of nested structures, including but extending beyond the home, school, neighborhood, and workplace settings in which people spend their everyday lives (see Figure 1.5). Each layer of the environment is viewed as having a powerful impact on development.

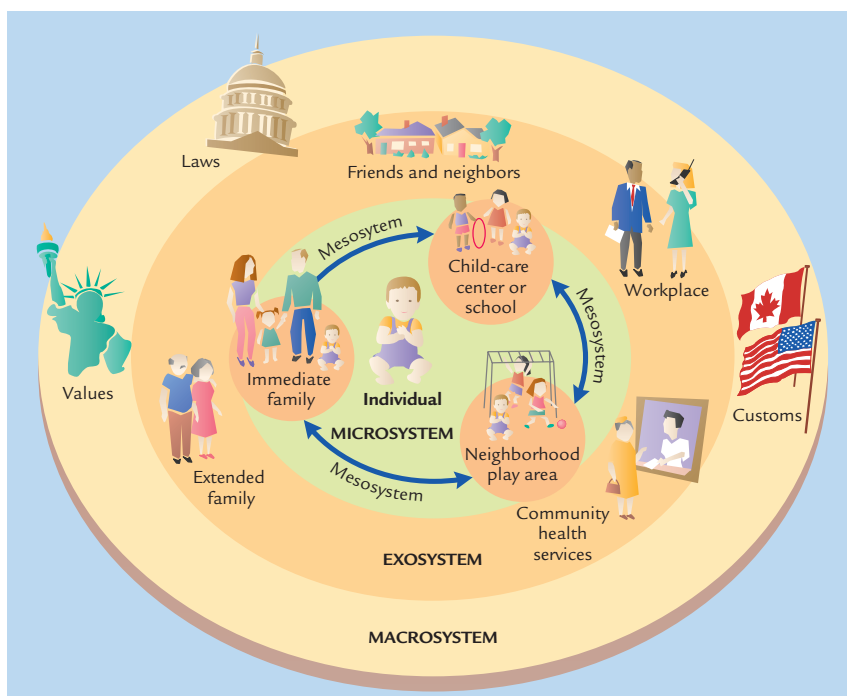
■ **The Microsystem.** The innermost level of the environment is the **microsystem**, which consists of activities and interaction patterns in the person's immediate surroundings. Bronfenbrenner emphasizes that to understand development at

this level, we must keep in mind that all relationships are *bi-directional*. For example, adults affect children's behavior, but children's biologically and socially influenced characteristics—their physical attributes, personalities, and capacities—also affect adults' behavior. A friendly, attentive child is likely to evoke positive and patient reactions from parents, whereas an active, distractible youngster is more likely to be a target of parental restriction and punishment. Bidirectional interactions that occur often over time have an enduring impact on development (Collins et al., 2000; Crockenberg & Leerkes, 2003).

Other individuals in the microsystem affect the quality of any two-person relationship. If they are supportive, then interaction is enhanced. For example, when parents encourage each other in their child-rearing roles, each engages in more effective parenting. In contrast, marital conflict is associated with inconsistent discipline and hostile reactions toward children. In response, children typically become hostile, and both parent and child adjustment suffers (Hetherington & Stanley-Hagen, 2002).

■ **The Mesosystem.** The second level of Bronfenbrenner's model, the **mesosystem**, encompasses connections between microsystems. For example, a child's academic progress depends not just on activities that take place in classrooms but also on parent involvement in school life and on the extent to which academic learning is carried over into the home (Epstein & Sanders, 2002). Among adults, how well a person functions as spouse and parent at home is affected by relationships in the workplace, and vice versa (Gottfried, Gottfried, & Bathurst, 2002).

■ **FIGURE 1.5 Structure of the environment in ecological systems theory.** The *microsystem* concerns relations between the developing person and the immediate environment; the *mesosystem*, connections among immediate settings; the *exosystem*, social settings that affect but do not contain the developing person; and the *macrosystem*, the values, laws, customs, and resources of the culture that affect activities and interactions at all inner layers. The *chronosystem* (not pictured) is not a specific context. Instead, it refers to the dynamic, ever-changing nature of the person's environment.







In ecological systems theory, development occurs within a complex system of relationships affected by multiple levels of the environment. This father greets his daughter at the end of the school day. The girl's experiences at school (microsystem) and the father's experiences at work (exosystem) affect father-daughter interaction.

■ **The Exosystem.** The **exosystem** is made up of social settings that do not contain the developing person but nevertheless affect experiences in immediate settings. These can be formal organizations, such as the board of directors in the individual's workplace or community health and welfare services. For example, flexible work schedules, paid maternity and paternity leave, and sick leave for parents whose children are ill are ways that work settings can help parents rear children and, indirectly, enhance the development of both adult and child. Exosystem supports can also be informal. Children are affected by their parents' social networks—friends and extended-family members who provide advice, companionship, and even financial assistance. Research confirms the negative impact of a breakdown in exosystem activities. Families who are socially isolated, with few personal or community-based ties, or who are affected by unemployment show increased rates of conflict and child abuse (Emery & Laumann-Billings, 1998).

■ **The Macrosystem.** The outermost level of Bronfenbrenner's model, the **macrosystem**, is not a specific context but, rather, consists of cultural values, laws, customs, and resources. The priority that the macrosystem gives to the needs of children and adults affects the support they receive at inner levels of the environment. For example, in countries that set high standards for child care and workplace benefits for employed parents, children are more likely to have favorable experiences in their immediate settings. And when the government provides a generous pension plan for retirees, it supports the well-being of the elderly.

■ **A Dynamic, Ever-Changing System.** According to Bronfenbrenner, the environment is not a static force that affects people in a uniform way. Instead, it is dynamic and ever-changing. Whenever individuals add or let go of roles or settings in their lives, the breadth of their microsystems changes. Throughout life, these shifts in contexts—or *ecological transitions*, as Bronfenbrenner calls them—are often important turning points in development. Starting school, entering the workforce, marrying, becoming a parent, getting divorced, moving, and retiring are examples.

Bronfenbrenner refers to the temporal dimension of his model as the **chronosystem** (the prefix *chrono* means “time”). Life changes can be imposed externally. Alternatively, they can arise from within the person, since individuals select, modify, and create many of their own settings and experiences. How they do so depends on their age; their physical, intellectual, and personality characteristics; and their environmental opportunities. Therefore, in ecological systems theory, development is neither controlled by environmental circumstances nor driven by inner dispositions. Instead, people are products and producers of their environments, so both people and their environments form a network of interdependent effects. Our discussion of resilience on page 10 illustrates this idea. We will see many more examples in later chapters.

## Ask Yourself

### Review

Explain how each recent theoretical perspective regards children and adults as active contributors to their own development.

### Apply

Mario wants to find out precisely how children of different ages recall stories. Anna is interested in how adult-child communication in different cultures influences children's storytelling. Which theoretical perspective has Mario probably chosen? How about Anna? Explain.

### Connect

Is ecological systems theory compatible with assumptions of the lifespan perspective—that development is lifelong, multidirectional, highly plastic, and influenced by multiple, interacting forces? Explain.

### Reflect

To illustrate the chronosystem in ecological systems theory, select an important event from your childhood, such as the birth of a sibling or a class with an inspiring teacher. How did the event affect you? How might its impact have differed had you been five years younger? How about five years older?

## Comparing and Evaluating Theories

In the preceding sections, we reviewed major theoretical perspectives in human development research. They differ in many respects. First, they focus on different domains of development. Some, such as the psychoanalytic perspective and ethology, emphasize emotional and social development. Others, such as Piaget's cognitive-developmental theory, informa-

tion processing, and Vygotsky's sociocultural theory, stress changes in thinking. The remaining approaches—behaviorism, social learning theory, evolutionary developmental psychology, ecological systems theory, and the lifespan perspective—discuss many aspects of human functioning. Second, every theory contains a point of view about development. As we conclude our review of theoretical perspectives, identify the stand each theory takes on the controversial issues presented at the beginning of this chapter. Then check your analysis against Table 1.5.

**Table 1.5**
**Stances of Major Theories on Basic Issues in Human Development**

Theory	Continuous or Discontinuous Development?	One Course of Development or Many?	Relative Influence of Nature and Nurture
Psychoanalytic perspective	<i>Discontinuous:</i> Psychosexual and psychosocial development takes place in stages.	<i>One course:</i> Stages are assumed to be universal.	<i>Both nature and nurture:</i> Innate impulses are channeled and controlled through child-rearing experiences. <i>Early experiences</i> set the course of later development.
Behaviorism and social learning theory	<i>Continuous:</i> Development involves an increase in learned behaviors.	<i>Many possible courses:</i> Behaviors reinforced and modeled may vary from person to person.	<i>Emphasis on nurture:</i> Development is the result of conditioning and modeling. <i>Both early and later experiences</i> are important.
Piaget's cognitive-developmental theory	<i>Discontinuous:</i> Cognitive development takes place in stages.	<i>One course:</i> Stages are assumed to be universal.	<i>Both nature and nurture:</i> Development occurs as the brain grows and children exercise their innate drive to discover reality in a generally stimulating environment. <i>Both early and later experiences</i> are important.
Information processing	<i>Continuous:</i> Children and adults gradually improve in perception, attention, memory, and problem-solving skills.	<i>One course:</i> Changes studied characterize most or all children and adults.	<i>Both nature and nurture:</i> Children and adults are active, sense-making beings who modify their thinking as the brain grows and they confront new environmental demands. <i>Both early and later experiences</i> are important.
Ethology and evolutionary developmental psychology	<i>Both continuous and discontinuous:</i> Children and adults gradually develop a wider range of adaptive behaviors. Sensitive periods occur, in which qualitatively distinct capacities emerge fairly suddenly.	<i>One course:</i> Adaptive behaviors and sensitive periods apply to all members of a species.	<i>Both nature and nurture:</i> Evolution and heredity influence behavior, and learning lends greater adaptiveness to it. In sensitive periods, <i>early experiences</i> set the course of later development.
Vygotsky's sociocultural theory	<i>Both continuous and discontinuous:</i> Language development and schooling lead to stagewise changes. Dialogues with more expert members of society also lead to continuous changes that vary from culture to culture.	<i>Many possible courses:</i> Socially mediated changes in thought and behavior vary from culture to culture.	<i>Both nature and nurture:</i> Heredity, brain growth, and dialogues with more expert members of society jointly contribute to development. <i>Both early and later experiences</i> are important.
Ecological systems theory	<i>Not specified.</i>	<i>Many possible courses:</i> Biological dispositions join with environmental forces at multiple levels to mold development in unique ways.	<i>Both nature and nurture:</i> The individual's characteristics and the reactions of others affect each other in a bidirectional fashion. <i>Both early and later experiences</i> are important.
Lifespan perspective	<i>Both continuous and discontinuous:</i> Continuous gains and declines and discontinuous, stagewise emergence of new skills occur.	<i>Many possible courses:</i> Development is influenced by multiple, interacting biological, psychological, and social forces, many of which vary from person to person, leading to diverse pathways of change.	<i>Both nature and nurture:</i> Development is multidimensional, affected by an intricate blend of hereditary and environmental factors. Emphasizes plasticity at all ages. <i>Both early and later experiences</i> are important.

Finally, all theories have strengths and limitations. Perhaps you found that you were attracted to some theories, but you have doubts about others. As you read more about development in later chapters, you may find it useful to keep a notebook in which you test your theoretical likes and dislikes against the evidence. Don't be surprised if you revise your ideas many times, just as theorists have done since scientific study of development began.

## Studying Development

In every science, research is usually based on a prediction about behavior drawn from a theory, or what we call a *hypothesis*. Theories and hypotheses, however, merely initiate the many activities that result in sound evidence on human development. Conducting research according to scientifically accepted procedures involves many steps and choices. Investigators must decide which participants, and how many, to include. Then they must figure out what the participants will be asked to do and when, where, and how many times each will be seen. Finally, they must examine and draw conclusions from their data.

In the following sections, we look at research strategies commonly used to study human development. We begin with *research methods*—participants' specific activities, such as taking tests, answering questionnaires, responding to interviews, or being observed. Then we turn to *research designs*—overall plans for research studies that permit the best possible test of the investigator's hypothesis. Finally, we discuss ethical issues involved in doing research with human participants.

Why learn about research strategies? Why not leave these matters to research specialists and concentrate, instead, on what is known about the developing person and how this knowledge can be applied? There are two reasons. First, each of us must be a wise and critical consumer of knowledge. Knowing the strengths and limitations of various research strategies is important in separating dependable information from misleading results. Second, individuals who work directly with children or adults may be in a unique position to build bridges between research and practice by carrying out research, either on their own or in partnership with experienced investigators. Community agencies, such as schools, mental health facilities, and parks and recreation programs, sometimes collaborate with researchers in designing, implementing, and evaluating interventions aimed at enhancing development (Lerner, Fisher, & Weinberg, 2000). To broaden these efforts, a basic understanding of the research process is essential.

### Common Research Methods

How does a researcher choose a basic approach to gathering information? Common methods include systematic observation, self-reports (such as questionnaires and interviews), clinical or case studies of a single individual, and ethnographies of the life circumstances of a specific group of people. Table 1.6 on page 28 summarizes the strengths and limitations of each of these methods.

**Systematic Observation.** Observations of the behavior of children and adults can be made in different ways. One approach is to go into the field, or natural environment, and record the behavior of interest—a method called **naturalistic observation**.

A study of preschoolers' responses to their peers' distress provides a good example (Farver & Branstetter, 1994). Observing 3- and 4-year-olds in child-care centers, the researchers recorded each instance of crying and the reactions of nearby children—whether they ignored, watched, commented on the child's unhappiness, scolded or teased, or shared, helped, or expressed sympathy. Caregiver behaviors—explaining why a child was crying, mediating conflict, or offering comfort—were noted to see if adult sensitivity was related to children's caring responses. A strong relationship emerged. The great strength of naturalistic observation is that investigators can see directly the everyday behaviors they hope to explain.

Naturalistic observation also has a major limitation: Not all individuals have the same opportunity to display a particular behavior in everyday life. In the study just described, some children might have witnessed a child crying more often than others or received more direct prompting from caregivers to respond positively. For these reasons, they might have displayed more compassion.

Researchers commonly deal with this difficulty by making **structured observations**, in which the investigator sets up a laboratory situation that evokes the behavior of interest so that every participant has an equal opportunity to display the response. In one study, 2-year-olds' emotional reactions to harm that they thought they had caused were observed by asking them to take care of a rag doll that had been modified so its leg would fall off when the child picked it up. To make the child feel at fault, once the leg detached, an adult "talked for" the doll by saying, "Ow!" Researchers recorded children's facial experiences of sadness and concern for the injured doll, efforts to help the doll, and body tension—responses that indicated remorse and a desire to make amends for the mishap. In addition, mothers were asked to engage in brief conversations about emotions with their children (Garner, 2003). Toddlers whose mothers more often explained the causes and consequences of emotion were more likely to express concern for the injured doll.

The procedures used to collect systematic observations vary, depending on the research problem posed. Some investigators must describe the entire stream of behavior—everything said and done over a certain time period. In one of my own studies, I wanted to find out how sensitive, responsive, and verbally stimulating caregivers were when they interacted with children in child-care centers. In this case, everything each caregiver said and did—even the amount of time she spent away from the children, taking coffee breaks and talking on the phone—was important. In other studies, only one or a few kinds of behavior are needed, so researchers can use more efficient procedures in which they record only specified events or mark off behaviors on checklists.

Researchers have devised ingenious ways of observing difficult-to-capture behaviors. For example, to record instances

**Table 1.6****Strengths and Limitations of Common Research Methods**

Method	Description	Strengths	Limitations
<b>Systematic Observation</b>			
Naturalistic observation	Observation of behavior in natural contexts	Reflects participants' everyday lives.	Cannot control conditions under which participants are observed.
Structured observation	Observation of behavior in a laboratory, which conditions are the same for all participants	Grants each participant an equal opportunity to display the behavior of interest.	May not yield observations typical of participants' behavior in everyday life.
<b>Self-Reports</b>			
Clinical interview	Flexible interviewing procedure in which the investigator obtains a complete account of the participant's thoughts	Comes as close as possible to the way participants think in everyday life. Great breadth and depth of information can be obtained in a short time.	May not result in accurate reporting of information. Flexible procedure makes comparing individuals' responses difficult.
Structured interview, questionnaires, and tests	Self-report instruments in which each participant is asked the same questions in the same way	Permits comparisons of participants' responses and efficient data collection. Researchers can specify answer alternatives that participants might not think of in an open-ended interview.	Does not yield the same depth of information as a clinical interview. Responses are still subject to inaccurate reporting.
<b>Clinical, or Case Study, Method</b>			
	A full picture of one individual's psychological functioning, obtained by combining interviews, observations, and test scores	Provides rich, descriptive insights into factors that affect development.	May be biased by researchers' theoretical preferences. Findings cannot be applied to individuals other than the participant.
<b>Ethnography</b>			
	Participant observation of a culture or distinct social group; by making extensive field notes, the researcher tries to capture the culture's unique values and social processes	Provides a more thorough and accurate description than can be derived from a single observational visit, interview, or questionnaire.	May be biased by researchers' values and theoretical preferences. Findings cannot be applied to individuals and settings other than the ones studied.

of bullying, a group of investigators set up video cameras overlooking a classroom and a playground and had fourth to sixth graders wear small, remote microphones and pocket-sized transmitters (Craig, Pepler, & Atlas, 2000). Results revealed that bullying occurred often—at rates of 2.4 episodes per hour in the classroom and 4.5 episodes per hour on the playground. Yet only 15 to 18 percent of the time did teachers take steps to stop the harassment.

Systematic observation provides invaluable information on how children and adults actually behave, but it tells us little about the reasoning behind their responses. For that information, researchers must turn to self-report techniques.

■ **Self-Reports.** Self-reports ask research participants to provide information on their perceptions, thoughts, abilities,

feelings, attitudes, beliefs, and past experiences. They range from relatively unstructured interviews to highly structured interviews, questionnaires, and tests.

In a **clinical interview**, researchers use a flexible, conversational style to probe for the participant's point of view. In the following example, Piaget questioned a 5-year-old child about his understanding of dreams:

*Where does the dream come from?—I think you sleep so well that you dream.—Does it come from us or from outside?—From outside.—When you are in bed and you dream, where is the dream?—In my bed, under the blanket. I don't really know. If it was in my stomach, the bones would be in the way and I shouldn't see it.—Is the dream there when you sleep?—Yes, it is in the bed beside me. (Piaget, 1926/1930, pp. 97–98)*

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Using the clinical interview, this researcher asks a mother to describe her child's development. The method permits a large amount of information to be gathered in a relatively short period, but a drawback is that participants do not always report information accurately.

Notice how Piaget encouraged the child to expand his ideas. Although a researcher conducting clinical interviews with more than one participant would typically ask the same first question to ensure a common task, individualized prompts are given to evoke a fuller picture of each person's reasoning (Ginsburg, 1997).

The clinical interview has two major strengths. First, it permits people to display their thoughts in terms that are as close as possible to the way they think in everyday life. Second, it can provide a large amount of information in a fairly brief period. For example, in an hour-long session, we can obtain a wide range of information on child rearing from a parent or on life circumstances from an elder—much more than we could capture by observing for the same amount of time.

A major limitation of the clinical interview has to do with the accuracy with which people report their thoughts, feelings, and experiences. Some participants, wishing to please the interviewer, may make up answers that do not represent their actual thinking. When asked about past events, some may have trouble recalling exactly what happened. And because the clinical interview depends on verbal ability and expressiveness, it may underestimate the capacities of individuals who have difficulty putting their thoughts into words.

The clinical interview has also been criticized because of its flexibility. When each participant is asked different questions, responses may reflect the manner of interviewing rather than real differences in the way people think about a topic. **Structured interviews**, in which each participant is asked the same set of questions in the same way, eliminate this problem. These instruments are also much more efficient. Answers are briefer, and researchers can obtain written responses from an entire group of children or adults simultaneously. Also, by listing answer alternatives, researchers can specify the activities and behaviors of interest—ones that participants might not think of in an open-ended clinical interview. For example, in a study in which parents were asked what they considered “the

most important thing for children to prepare them for life,” 62 percent checked “to think for themselves” when this choice appeared on a list. Yet only 5 percent thought of it during a clinical interview (Schwarz, 1999).

Nevertheless, structured interviews do not yield the same depth of information as clinical interviews. And they can still be affected by the problem of inaccurate reporting.

■ **The Clinical, or Case Study, Method.** An outgrowth of psychoanalytic theory, the **clinical, or case study, method** brings together a wide range of information on one person, including interviews, observations, and sometimes test scores. The aim is to obtain as complete a picture as possible of that individual's psychological functioning and the experiences that led up to it.

The clinical method is well suited to studying the development of types of individuals who are few in number and who vary widely in characteristics. For example, it has been used to find out what contributes to the accomplishments of *prodigies*—extremely gifted children who attain adult competence in a field before age 10 (Gardner, 1998b). Consider Adam, a boy who read, wrote, and composed musical pieces before he was out of diapers. By age 4, Adam was deeply involved in mastering human symbol systems—French, German, Russian, Sanskrit, Greek, the computer programming language BASIC, ancient hieroglyphs, music, and mathematics. Adam's parents provided a home rich in stimulation and reared him with affection, firmness, and humor. They searched for schools in which he could both develop his abilities and form rewarding social relationships. He graduated from college at age 18 and continued to pursue musical composition. Would Adam have realized his abilities without the chance combination of his special gift with nurturing, committed parents? Probably not, researchers concluded (Goldsmith, 2000).

The clinical method yields richly detailed case narratives that offer valuable insights into the many factors that affect development. Like all other methods, however, it has drawbacks. Information is often collected unsystematically and subjectively, permitting too much leeway for researchers' theoretical preferences to bias their observations and interpretations. In addition, investigators cannot assume that their conclusions apply, or generalize, to anyone other than the person studied (Stanovich, 2004). Even when patterns emerge across several cases, it is wise to confirm these with other research strategies.

■ **Methods for Studying Culture.** A growing interest in the impact of culture has led researchers to adjust the methods just considered or tap procedures specially devised for cross-cultural and multicultural research (Triandis, 1998). Which approach investigators choose depends on their research goals.

Sometimes researchers are interested in characteristics that are believed to be universal but that vary in degree from one society to the next: Are parents warmer or more directive in some cultures than others? How strong are gender stereotypes in different nations? In each instance, several cultural groups will be compared, and all participants must be questioned or



This Western ethnographer is spending months living among the Efe people of the Republic of Congo. Here he observes a group of young children sharing food. Among the Efe, cooperation and generosity are highly valued and encouraged at an early age.

observed in the same way. Therefore, researchers draw on the self-report and observational procedures we have already considered, adapting them through translation so they can be understood in each cultural context. For example, to study cultural variation in parenting practices, the same questionnaire, asking for ratings on such items as “I often hug and kiss my child” or “I scold my child when his/her behavior does not meet my expectations,” is given to all participants (Wu et al., 2002).

At other times, researchers want to uncover the *cultural meanings* of children’s and adults’ behaviors by becoming as familiar as possible with their way of life. To achieve this goal, researchers rely on a method borrowed from the field of anthropology—**ethnography**. Like the clinical method, ethnographic research is largely a descriptive, qualitative technique. But instead of aiming to understand a single individual, it is directed toward understanding a culture or a distinct social group through *participant observation*. Typically, the researcher spends months, and sometimes years, in the cultural community, participating in its daily life. Extensive field notes are made, consisting of a mix of observations, self-reports from members of the culture, and careful interpretations by the investigator (Miller, Hengst, & Wang, 2003; Shweder, 1996). Later, these notes are put together into a description of

the community that tries to capture its unique values and social processes.

The ethnographic method assumes that by entering into close contact with a social group, researchers can understand the beliefs and behaviors of its members in a way not possible with an observational visit, interview, or questionnaire. In some ethnographies, investigators look at many aspects of experience, as one team of researchers did in describing what it is like to grow up in a small American town. Others focus on one or a few settings, such as home, school, or neighborhood life (LeVine et al., 1994; Peshkin, 1978, 1997; Valdés, 1998). Researchers may supplement traditional self-report and observational methods with ethnography if they suspect that unique meanings underlie cultural differences, as the Cultural Influences box on the following page reveals.

Ethnographers strive to minimize their influence on the culture they are studying by becoming part of it. Nevertheless, as with clinical studies, investigators’ cultural values and theoretical commitments sometimes lead them to observe selectively or misinterpret what they see. In addition, the findings of ethnographic studies cannot be assumed to generalize beyond the people and settings in which the research was conducted.

## Ask Yourself

### Review

Why might a researcher choose structured observation over naturalistic observation? How about the reverse? What might lead the researcher to opt for clinical interviewing over systematic observation?

### Apply

A researcher is interested in how elders experience daily life in different cultures. Which method should she use? Explain.

### Connect

What strengths and limitations do the clinical, or case study, method and ethnography have in common?

### Reflect

Reread the description of nonnormative influences on pages 11–12 and cite an example from your own life. Which method would be best-suited to studying the impact of such a nonnormative event on development?

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## General Research Designs

In deciding on a research design, investigators choose a way of setting up a study that permits them to test their hypotheses with the greatest certainty possible. Two main types of designs are used in all research on human behavior: *correlational* and *experimental*.

■ **Correlational Design.** In a **correlational design**, researchers gather information on individuals, generally in

# Cultural Influences

## Immigrant Youths: Amazing Adaptation

Over the past several decades, a rising tide of immigrants has come to North America, fleeing war and persecution in their homelands or seeking greater life chances. Today, one-fifth of the U.S. youth population has foreign-born parents; nearly one-third of these youths are foreign-born themselves. Similarly, immigrant youths are the fastest-growing segment of the Canadian population (Fuligni, 2001; Service Canada, 2005). In the United States, most come from Asia and Latin America; in Canada, from Asia, Africa, the Middle East, and Europe.

To find out how well immigrant youths are adapting to their new country, researchers use multiple research methods, including academic testing, questionnaires assessing psychological adjustment, and in-depth ethnographic research.

**Academic Achievement and Adjustment.** Despite a widespread belief that the transition to a new country has a negative impact on psychological well-being, recent evidence reveals that children of immigrant parents adapt amazingly well. Both first-generation (foreign-born) or second-generation (American- or Canadian-born, with immigrant parents) students achieve in school as well as or better than students of native-born parents (Fuligni, 1997; Saucier et al., 2002).

Findings on psychological adjustment are similar. Adolescents from immigrant families are less likely than their age-mates to commit delinquent and violent acts, to use drugs and alcohol, or to have early sex. They are also less likely to be obese or to have missed school because of illness. And they feel as positively about themselves as young people with native-born parents, and report less emotional distress. These successes do not depend on having extensive time to adjust to a new way of life. Recently arrived high school students do as well in school and report just as favorable self-esteem as students who came at younger ages (Fuligni, 1998; Saucier et al., 2002).

The outcomes just described are strongest for Chinese, Japanese, Korean, and East Indian youths, less dramatic for other ethnicities (Fuligni, 1997; Kao & Tienda, 1995; Louie, 2001). Variations in parental education and income account for these differences. Still, even first- and second-generation youths from ethnic groups that face considerable economic hardship (such as Mexican and Vietnamese) are remarkably successful (Fuligni & Yoshikawa, 2003). Factors other than income are responsible.

### Family and Community Influences.

Ethnographies reveal that immigrant parents uniformly express the belief that education is the surest way to improve life chances. Consequently, they highly value academic achievement (Goldenberg et al., 2001; Louie, 2001). Aware of the challenges their children face, immigrant parents underscore the importance of trying hard. They remind their children that educational opportunities were not available in their native countries and that as a result, they themselves are often limited to menial jobs.

Adolescents from immigrant families internalize their parents' valuing of education, endorsing it more strongly than age-mates with native-born parents (Asakawa, 2001; Fuligni, 1997). Because minority ethnicities usually stress allegiance to family and community over individual goals, first- and second-generation young people feel a strong sense of obligation to their parents. They view school success as one of the most important ways to repay their parents for the hardships they endured in coming to a new land (Fuligni, Yip, & Tseng, 2002; Suárez-Orozco & Suárez-Orozco, 2001). Both family relationships and school achievement protect these youths from risky behaviors, such as delinquency, early pregnancy, and drug use (see the *Biology and Environment* box on resilience on pages 10–11).

Immigrant parents typically develop close ties to an ethnic community. It exerts additional control through a high consensus on values and constant monitoring of young people's activities. The following comments capture the power of these family and community forces:

CP PHOTO/ADRIAN WYLD



Immigrant youths from central and south Asia to Toronto, Canada, enjoy lunch together in their school cafeteria. Cultural values that foster allegiance to family and community and that emphasize the importance of achievement play a vital role in these young peoples' academic success and favorable psychological adjustment.

*A New York City cab driver from Ghana, father of three teenage boys who later enrolled at prestigious universities: "I make sure I know my children's friends and if they want to come to my house they have to follow my rules . . . and I never let my children work. . . . Who knows what influences they will be exposed to?" (Suárez-Orozco & Suárez-Orozco, 2001, p. 89)*

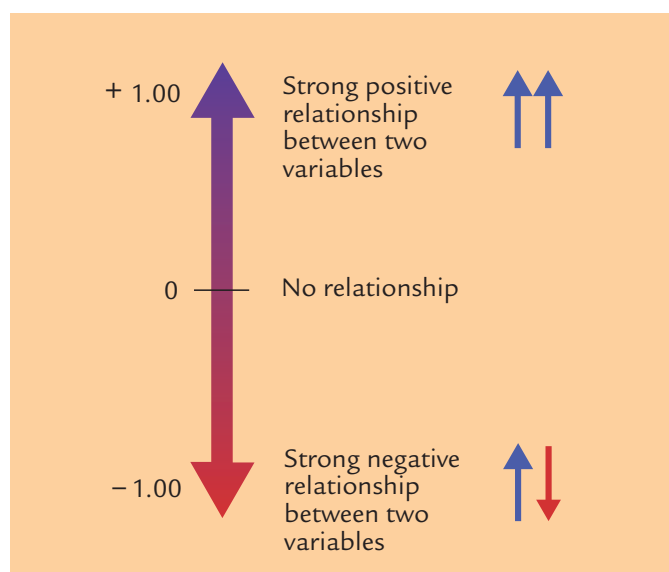
*Elizabeth, age 16, straight-A student, like her two older sisters: "My parents know pretty much all the kids in the neighborhood. . . . Everybody here knows everybody else. It's hard to get away with much." (Zhou & Bankston, 1998, pp. 93, 130)*

Immigrant youths' experiences are not problem-free. In interviews with adolescents who had arrived in Canada within the previous five years, the majority found that their first year was "very difficult" because they did not yet speak one of the country's two official languages (English and French) and felt socially isolated (Hanvey & Kunz, 2000). And tensions between family values and the new culture often create identity conflicts—challenges we will take up in Chapter 12. But family and community cohesion, supervision, and expectations for academic and social maturity powerfully shape long-term positive outcomes for these young people.

natural life circumstances, without altering their experiences. Then they look at relationships between participants' characteristics and their behavior or development. Suppose we want to answer the following question: Do parents' styles of interacting with children have any bearing on children's intelligence? Does the arrival of a baby influence a couple's marital satisfaction? Does the death of a spouse in old age affect the surviving partner's physical health and psychological well-being? In these and many other instances, the conditions of interest are difficult or impossible to arrange and control and must be studied as they currently exist.

Correlational studies have one major limitation: We cannot infer cause and effect. For example, suppose we find that parental interaction is related to children's intelligence. But we would not know whether parents' behavior actually *causes* intellectual differences among children. In fact, the opposite is possible: The behaviors of highly intelligent children may be so attractive that they cause parents to interact more favorably. Or a third variable that we did not even consider, such as the amount of noise and distraction in the home, may cause changes in both maternal interaction and children's intelligence.

In correlational studies and in other types of research designs, investigators often examine relationships by using a **correlation coefficient**, a number that describes how two measures, or variables, are associated with one another. We will encounter the correlation coefficient in discussing research findings throughout this book, so let's look at what it is and how it is interpreted. A correlation coefficient can range in value from +1.00 to -1.00. The *magnitude*, or *size*, of the number shows the *strength of the relationship*. A zero correlation indicates no relationship, but the closer the value is to +1.00 or -1.00, the stronger the relationship (see Figure 1.6). For instance, a cor-



**FIGURE 1.6** The meaning of correlation coefficients. The magnitude of the number indicates the *strength* of the relationship. The sign of the number (+ or -) indicates the *direction* of the relationship.

relation of  $-0.78$  is high,  $-0.52$  is moderate, and  $-0.18$  is low. Note, however, that correlations of  $+0.52$  and  $-0.52$  are equally strong. The *sign of the number* (+ or -) refers to the *direction of the relationship*. A positive sign (+) means that as one variable *increases*, the other also *increases*. A negative sign (-) indicates that as one variable *increases*, the other *decreases*.

Let's look at some examples of how a correlation coefficient works. One researcher reported a  $+0.55$  correlation between a measure of maternal language stimulation and the size of children's vocabularies at 2 years of age (Hoff, 2003). This is a moderate correlation, which indicates that mothers who verbalized more had children who were more advanced in language development. In two other studies, maternal sensitivity was modestly associated with children's cooperativeness in consistent ways. First, maternal warmth and encouragement during play correlated positively with 2-year-olds' willingness to comply with their mother's directive to clean up toys, at  $+0.34$  (Feldman & Klein, 2003). Second, the extent to which mothers interrupted and controlled their 3-year-old's play correlated negatively with children's compliance, at  $-0.23$  (Whiteside-Mansell et al., 2003).

All these investigations found correlations between parenting and young children's behavior. Are you tempted to conclude that the maternal behaviors influenced children's responses? Although the researchers suspected this was so, none of the studies revealed cause and effect. But finding a relationship in a correlational study suggests that tracking down its cause—using a more powerful experimental strategy, if possible—would be worthwhile.

**Experimental Design.** An **experimental design** permits inferences about cause and effect because researchers use an evenhanded procedure to assign people to two or more treatment conditions. In an experiment, the events and behaviors of interest are divided into two types, independent and dependent variables. The **independent variable** is the one the investigator expects to cause changes in another variable. The **dependent variable** is the one the investigator expects to be influenced by the independent variable. Cause-and-effect relationships can be detected because the researcher directly *controls* or *manipulates* changes in the independent variable by exposing participants to the treatment conditions. Then the researcher compares their performance on measures of the dependent variable.

In one *laboratory experiment*, investigators explored the impact of adults' angry interactions on children's adjustment (El-Sheikh, Cummings, & Reiter, 1996). They hypothesized that the way angry encounters end (independent variable) affects children's emotional reactions (dependent variable). Four- and 5-year-olds were brought to a laboratory one at a time, accompanied by their mothers. One group was exposed to an *unresolved-anger treatment*, in which two adult actors entered the room and argued but did not work out their disagreements. The other group witnessed a *resolved-anger treatment*, in which the adults ended their disputes by apologizing and compromising. During a follow-up adult conflict, chil-





Does the death of a spouse in old age affect the surviving partner's physical health and psychological well-being? A correlational design can be used to answer this question, but it does not permit researchers to determine the precise cause of their findings.

dren in the resolved-anger treatment showed less distress, as measured by fewer anxious facial expressions, less freezing in place, and less seeking of closeness to their mothers. The experiment revealed that anger resolution can reduce the stressful impact of adult conflict on children.

In experimental studies, investigators must take special precautions to control for participants' characteristics that could reduce the accuracy of their findings. For example, in the study just described, if more children from homes high in parental conflict ended up in the unresolved-anger treatment, we would not be able to tell whether the independent variable or the children's backgrounds produced the results. To protect against this problem, researchers engage in **random assignment** of participants to treatment conditions. By using an unbiased procedure, such as drawing numbers out of a hat or flipping a coin, investigators increase the chances that participants' characteristics will be equally distributed across treatment conditions.

■ **Modified Experimental Designs: Field and Natural Experiments.** Most experiments are conducted in laboratories, where researchers can achieve the maximum possible control over treatment conditions. But, as we have already indicated, findings obtained in laboratories may not always apply to everyday situations. In *field experiments*, investigators capitalize on opportunities to assign participants randomly to treatment conditions in natural settings. In the experiment just described, we can conclude that the emotional climate established by adults affects children's behavior in the laboratory. But does it also do so in daily life?

Another study helps answer this question (Yarrow, Scott, & Waxler, 1973). This time, the research was carried out in a child-care center. A caregiver deliberately interacted differently with two groups of preschoolers. In one condition (the *nurturant treatment*), she modeled many instances of warmth and helpfulness. In the second condition (the *control*, since it involved no treatment), she behaved as usual, with no special emphasis on concern for others. Two weeks later, the researchers created several situations that called for helpfulness. For example, a visiting mother asked each child to watch her baby for a few moments, but the baby's toys had fallen out of the playpen. The investigators found that children exposed to the nurturant treatment were much more likely than those in the control condition to return toys to the baby.

Often researchers cannot randomly assign participants and manipulate conditions in the real world. Sometimes they can compromise by conducting *natural, or quasi-, experiments*. Treatments that already exist, such as different family environments, schools, workplaces, or retirement villages, are compared. These studies differ from correlational research only in that groups of participants are carefully chosen to ensure that their characteristics are as much alike as possible. In this way, investigators rule out as best they can alternative explanations for their treatment effects. But, despite these efforts, natural experiments cannot achieve the precision and rigor of true experimental research.

To help you compare correlational and experimental designs, Table 1.7 on page 34 summarizes their strengths and limitations. It also includes an overview of designs for studying development, to which we now turn.

## Designs for Studying Development

Scientists interested in human development require information about the way research participants change over time. To answer questions about development, they must extend correlational and experimental approaches to include measurements at different ages. Longitudinal and cross-sectional designs are special *developmental* research strategies. In each, age comparisons form the basis of the research plan.

■ **The Longitudinal Design.** In a **longitudinal design**, participants are studied repeatedly, and changes are noted as they get older. The time spanned may be relatively short (a few months to several years) or very long (a decade or even a lifetime). The longitudinal approach has two major strengths. First, because it tracks the performance of each person over time, researchers can identify common patterns as well as individual differences in development. Second, longitudinal studies permit investigators to examine relationships between early and later events and behaviors. Let's illustrate these ideas.

A group of researchers wondered whether children who display extreme personality styles—either angry and explosive or shy and withdrawn—retain the same dispositions as adults. In addition, the researchers wanted to know what kinds of experiences promote stability or change in personality and

**Table 1.7****Strengths and Limitations of Research Designs**

Design	Description	Strengths	Limitations
<b>General</b>			
Correlational	The investigator obtains information on participants without altering their experiences.	Permits study of relationships between variables.	Does not permit inferences about cause-and-effect relationships.
Experimental	Through random assignment of participants to treatment conditions, the investigator manipulates an independent variable and examines its effect on a dependent variable. Can be conducted in the laboratory or the natural environment.	Permits inferences about cause-and-effect relationships.	When conducted in the laboratory, findings may not generalize to the real world. In <i>field experiments</i> , control over the treatment is usually weaker than in the laboratory. In <i>natural, or quasi-, experiments</i> , lack of random assignment substantially reduces the precision of research.
<b>Developmental</b>			
Longitudinal	The investigator studies the same group of participants repeatedly at different ages.	Permits study of common patterns and individual differences in development and relationships between early and later events and behaviors.	Age-related changes may be distorted because of participant dropout, practice effects, and cohort effects.
Cross-sectional	The investigator studies groups of participants differing in age at the same point in time.	More efficient than the longitudinal design. Not plagued by such problems as participant dropout and practice effects.	Does not permit study of individual developmental trends. Age differences may be distorted because of cohort effects.
Sequential	The investigator conducts several similar cross-sectional or longitudinal studies (called sequences) at varying times.	Permits longitudinal and cross-sectional comparisons. Reveals cohort effects.	May have the same problems as longitudinal and cross-sectional strategies, but the design itself helps identify difficulties.

what consequences explosiveness and shyness have for long-term adjustment. To answer these questions, the researchers delved into the archives of the Guidance Study, a well-known longitudinal investigation initiated in 1928 at the University of California, Berkeley, and continued for several decades (Caspi, Elder, & Bem, 1987, 1988).

Results revealed that the two personality styles were moderately stable. Between ages 8 and 30, a good number of individuals remained the same, whereas others changed substantially. When stability did occur, it appeared to be due to a “snowballing effect,” in which children evoked responses from adults and peers that acted to maintain their dispositions. Explosive youngsters were likely to be treated with anger, whereas shy children were apt to be ignored. As a result, the two types of children came to view their social worlds differently. Explosive children regarded others as hostile; shy children regarded them as unfriendly (Caspi & Roberts, 2001). Together these factors led explosive children to sustain or increase their unruliness and shy children to continue to withdraw.

Persistence of extreme personality styles affected many areas of adult adjustment. For men, the results of early explo-

siveness were most apparent in their work lives, in the form of conflicts with supervisors, frequent job changes, and unemployment. Since few women in this sample of an earlier generation worked after marriage, their family lives were most affected. Explosive girls grew up to be hotheaded wives and mothers who were especially prone to divorce. Sex differences in the long-term consequences of shyness were even greater. Men who had been withdrawn in childhood were delayed in marrying, becoming fathers, and developing stable careers. However, because a withdrawn, unassertive style was socially acceptable for females, women with shy personalities showed no special adjustment problems.

#### ■ Problems in Conducting Longitudinal Research.

Despite their strengths, longitudinal investigations pose a number of problems. For example, participants may move away or drop out of the research for other reasons. This changes the original sample so that it no longer represents the population to whom researchers would like to generalize their findings. Also, from repeated study, people may become more aware of their own thoughts, feelings, and actions and revise



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Cohort effects are the particular historical and cultural conditions that affect individuals born in the same time period. What cohort effects make the experiences of today's college students different from the experiences of these college students of the 1980s?

them in ways that have little to do with age-related change. In addition, they may become “test-wise.” Their performance may improve as a result of *practice effects*—better test-taking skills and increased familiarity with the test—not because of factors commonly associated with development.

The most widely discussed threat to longitudinal findings is **cohort effects** (see page 11): Individuals born in the same time period are influenced by a particular set of historical and cultural conditions. Results based on one cohort may not apply to people developing in other times. For example, unlike the findings on female shyness described in the preceding section, which were gathered in the 1950s, today's shy young women tend to be poorly adjusted—a difference that may be due to changes in gender roles in Western societies. Shy adults, whether male or female, feel more depressed, have fewer social supports, and may do less well in educational and career attainment than their agemates (Caspi, 2000; Caspi et al., 2003). Similarly, a longitudinal study of the lifespan development would probably result in quite different findings if it were carried out in the first decade of the twenty-first century, around the time of World War II, or during the Great Depression of the 1930s. (See the Lifespan Vista box on page 36.)

Cohort effects do not just operate broadly on an entire generation. They also occur when specific experiences influence some groups of individuals but not others in the same generation. For example, children who witnessed the terrorist attacks of September 11, 2001, either because they were near Ground Zero or because they saw injury and death on TV, were far more likely than other children to display persistent emotional problems, including intense fear, anxiety, and depression (Saylor et al., 2003). A study of one New York City sample suggested that as many as one-fourth of the city's children were affected (Hoven, Mandell, & Duarte, 2003).

■ **The Cross-Sectional Design.** The length of time it takes for many behaviors to change, even in limited longitudinal studies, has led researchers to turn toward a more convenient strategy for studying development. In the **cross-sectional design**, groups of people differing in age are studied at the same point in time. The cross-sectional design is an efficient strategy for describing age-related trends. Because participants are measured only once, researchers need not be concerned about such difficulties as participant dropout or practice effects.

A study in which students in grades 3, 6, 9, and 12 filled out a questionnaire about their sibling relationships provides a good illustration (Buhrmester & Furman, 1990). Findings revealed that sibling interaction was characterized by greater equality and less power assertion with age. Also, feelings of sibling companionship declined during adolescence. The researchers thought that several factors contributed to these age differences. As later-born children become more competent and independent, they no longer need, and are probably less willing to accept, direction from older siblings. And as adolescents move from psychological dependence on the family to greater involvement with peers, they may have less time and emotional need to invest in siblings. As we will see in Chapter 12, subsequent research has confirmed these intriguing ideas about the development of sibling relationships.

■ **Problems in Conducting Cross-Sectional Research.** Despite its convenience, cross-sectional research does not provide evidence about development at the level at which it actually occurs: the individual (Kraemer et al., 2000). For example, in the cross-sectional study of sibling relationships just discussed, comparisons are limited to age-group averages. We cannot tell if important individual differences exist. Indeed, longitudinal findings reveal that adolescents vary considerably in the changing quality of their sibling relationships. Although many become more distant, others become more supportive and intimate, and still others more rivalrous and antagonistic (Branje et al., 2004; Dunn, Slomkowski, & Beardsall, 1994).

Cross-sectional studies—especially those that cover a wide age span—have another problem. Like longitudinal research, they can be threatened by cohort effects. For example, comparisons of 10-year-old cohorts, 20-year-old cohorts, and 30-year-old cohorts—groups born and reared in different years—may not really represent age-related changes. Instead, they may reflect unique experiences associated with the historical period in which the age groups were growing up.

■ **Improving Developmental Designs.** Researchers have devised ways of building on the strengths and minimizing the weaknesses of longitudinal and cross-sectional approaches. Several modified developmental designs have resulted.

**Sequential Designs.** To overcome some of the limitations of traditional developmental designs, investigators sometimes use **sequential designs**, in which they conduct several similar cross-sectional or longitudinal studies (called *sequences*) at varying times. As the illustration in Figure 1.7 on page 37

# A Lifespan Vista

## Impact of Historical Times on the Life Course: The Great Depression and World War II

Cataclysmic events, such as economic disaster, wars, and rapid social change, shake the foundations of life, inducing shared adaptations among people born at the same time (Rogler, 2002). Glen Elder (1999) examined the hardships that families experienced during the Great Depression of the 1930s to study its influence on lifespan development. He delved into the vast archives of two major longitudinal studies: (1) the Oakland Growth Study, an investigation of individuals born in the early 1920s, who were adolescents when the Depression took its toll; and (2) the Guidance Study, whose participants were born in the late 1920s and were young children when their families faced severe financial losses.

In both cohorts, relationships changed when economic deprivation struck. As unemployed fathers lost status, mothers took greater control over family affairs. This reversal of traditional gender roles often sparked conflict. Fathers sometimes became explosive and punitive toward their children. At other times, they withdrew into passivity and depression. Mothers often became frantic with worry over their family's well-being and sought work to make ends meet (Elder, Liker, & Cross, 1984).

**Outcomes for Adolescents.** Although unusual burdens were placed on them as family lives changed, the Oakland Growth Study cohort—especially the boys—weathered economic hardship well. As adolescents, they were too old to be wholly dependent on their highly stressed parents. Boys spent less time at home as they searched for part-time jobs, and many turned toward adults and peers outside the family for emotional support. Girls took over household chores and cared for younger siblings. Their greater involvement in family affairs exposed them to more parental conflict and unhappiness. Con-

sequently, adolescent girls' adjustment in economically deprived homes was somewhat less favorable than that of adolescent boys (Elder, Van Nguyen, & Caspi, 1985).

These changes had major consequences for adolescents' future aspirations and adult lives. As girls focused on home and family, they were less likely to think about college and careers and more likely to marry early. Boys learned that economic resources could not be taken for granted, and they tended to make an early commitment to an occupational choice. And the chance to become a parent was especially important to men whose lives had been disrupted by the Depression. Perhaps because they believed that a rewarding career could not be guaranteed, they viewed children as the most enduring benefit of their adult lives.

### Outcomes for Children.

Unlike the Oakland Growth Study cohort, the Guidance Study participants were within the years of intense family dependency when the Depression struck. For young boys (who, as you will see in later chapters, are especially prone to adjustment problems in the face of family stress), the impact of economic strain was severe. They showed emotional difficulties and poor attitudes toward school and work that persisted through the teenage years (Elder & Caspi, 1988).

But as the Guidance Study sample became adolescents, another major historical event occurred: World War II. Thousands of men left their communities for military bases, leading

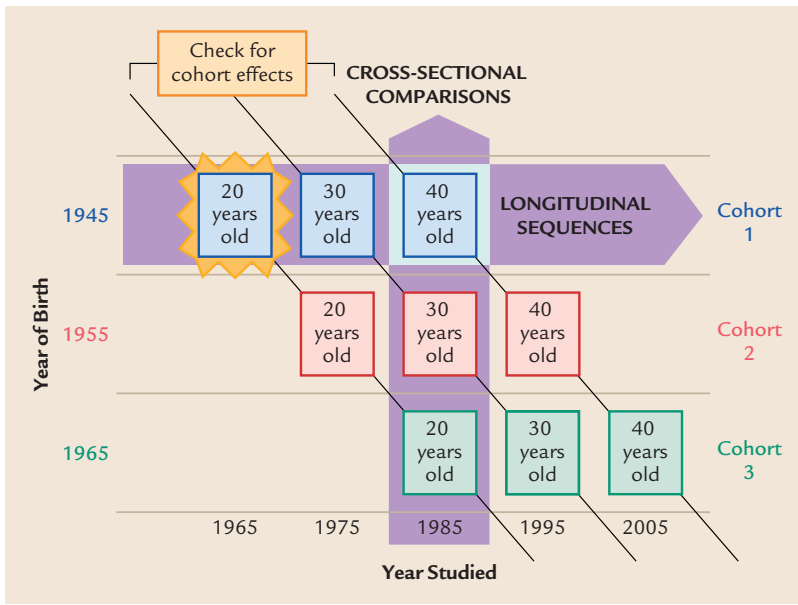
to dramatic life changes. Some combat veterans came away with symptoms of emotional trauma that persisted for decades. Yet for most young soldiers, war mobilization broadened their range of knowledge and experience. It also granted time out from civilian responsibilities, giving many soldiers a chance to consider where their lives were going. And the U.S. GI Bill of Rights, which provided government subsidies for college education, enabled veterans to expand their education and acquire new skills after the war. By middle adulthood, the Guidance Study veterans had reversed the early negative impact of the Great Depression. They were more successful educationally and occupationally than their counterparts who had not entered the service (Elder & Hareven, 1993).

Clearly, cultural-historical change does not have a uniform impact on development. Outcomes can vary considerably, depending on the pattern of historical events and the age at which people experience them.

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Historical time period has profound implications for development. These U.S. World War II veterans, entering college in 1945 under the GI Bill of Rights, benefited from educational opportunities that made them more successful, as a group, than their agemates who had not entered the service. Here ex-soldier students wait to be issued books, notes, and tuition checks for a new term.



**FIGURE 1.7** Example of a sequential design. Three cohorts, born in 1945 (blue), 1955 (pink), and 1965 (green), are followed longitudinally from 20 to 40 years of age. The design permits the researcher to check for cohort effects by comparing people of the same age who were born in different years. In a study that used this design, the Cohort 1 20-year-olds differed substantially from the 20-year-olds in Cohorts 2 and 3, indicating powerful history-graded influences. This design also permits longitudinal and cross-sectional comparisons. Similar findings lend additional confidence in the results.

reveals, some sequential designs combine longitudinal and cross-sectional strategies, an approach that has two advantages:

- We can find out whether cohort effects are operating by comparing participants of the same age who were born in different years. In the example in Figure 1.7, for example, we can compare the three longitudinal samples at ages 20, 30, and 40. If they do not differ, we can rule out cohort effects.
- We can make longitudinal and cross-sectional comparisons. If outcomes are similar in both, then we can be especially confident about our findings.

In a study that used the design in Figure 1.7, researchers wanted to find out whether adult personality development progresses as Erikson's psychosocial theory predicts (Whitbourne et al., 1992). Questionnaires measuring Erikson's stages were given to three cohorts of 20-year-olds, each born a decade apart. The cohorts were reassessed at 10-year intervals. Consistent with Erikson's theory, longitudinal and cross-sectional gains in identity and intimacy occurred between ages 20 and 30—a trend unaffected by historical time period. But a powerful cohort effect emerged for consolidation of the sense of industry: At age 20, Cohort 1 scored substantially below Cohorts 2 and 3. Look at Figure 1.7 again and notice that members of Cohort 1 reached age 20 in the mid-1960s. As college students, they were part of an era of political protest that reflected disenchantment with the work ethic. Once out of college, they caught up with the other cohorts, perhaps as a result of experiencing the pressures of the work world.

By uncovering cohort effects, sequential designs help explain diversity in development. Yet to date only a small number of sequential studies have been conducted.

**Combining Experimental and Developmental Designs.** Perhaps you noticed that all the examples of longitudinal and cross-sectional research we have considered permit only corre-

lational, not causal, inferences. Yet causal information is desirable, both for testing theories and for finding ways to enhance development. Sometimes researchers can explore the causal link between experiences and development by experimentally manipulating the experiences. If, as a result, development improves, then we have strong evidence for a causal association. Today, research that combines an experimental strategy with either a longitudinal or a cross-sectional approach is increasingly common. For an example, refer to the Social Issues box on page 38.

## Ask Yourself

### Review

Explain how cohort effects can affect the findings of both longitudinal and cross-sectional studies. How do sequential designs reveal cohort effects?

### Apply

A researcher compares older adults with chronic heart disease to those with no major health problems and finds that the first group scores lower on mental tests. Can the researcher conclude that heart disease causes a decline in intellectual functioning in late adulthood? Explain.

### Apply

A researcher wants to find out if aggressive preschoolers tend to have problems with peer relationships in elementary school. Which developmental design is appropriate for answering this question? Why?

### Reflect

Suppose a researcher asks you to enroll your baby in a 10-year longitudinal study. What factors would lead you to agree and stay involved? Do your answers shed light on why longitudinal studies often have biased samples?

## Social Issues

### Can Musical Experiences Enhance Intelligence?

In a 1993 experiment, researchers reported that college students who listened to a Mozart sonata for a few minutes just before taking a test of spatial reasoning abilities did better on the test than students who took the test after listening to relaxation instructions or sitting in silence (Rauscher, Shaw, & Ky, 1993). Strains of Mozart, the investigators concluded, seem to induce changes in the brain that “warm up” neural connections, thereby improving thinking. But the gain in performance, widely publicized as the “Mozart effect,” lasted only 15 minutes and proved difficult to replicate. Rather than involving a real change in ability, Mozart seemed to improve



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Children who take music lessons over many weeks gain in mental test performance compared to children who take drama lessons or who receive no lessons at all. To make music, children must use diverse intellectual skills, including extended focused attention, reading musical notation, memorizing lengthy passages, analyzing musical structures, and mastering technical skills.

arousal and mood, yielding better concentration on the test (Husain, Thompson, & Schellenberg, 2002; Thompson, Schellenberg, & Husain, 2001).

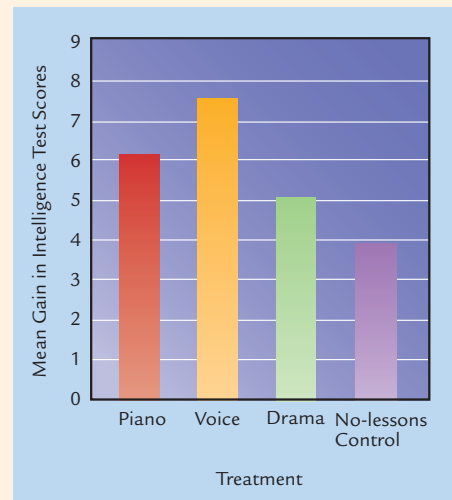
Despite mounting evidence that the Mozart effect was uncertain at best, the media and politicians were enthralled with the idea that a brief exposure of the brain to classical music in infancy, when neural connections are forming rapidly,

might yield lifelong intellectual benefits. Soon, Georgia, Tennessee, and South Dakota began providing free CDs for every newborn baby leaving the hospital. Yet no studies of the Mozart effect have ever been conducted on infants! And an experiment with school-age children failed to yield any intellectual gains as a result of simply listening to music (McKelvie & Low, 2002).

Research suggests that to produce lasting gains in mental test scores, interventions must be long-lasting and involve children’s active participation. Consequently, Glenn Schellenberg (2004) wondered, Can music lessons enhance intelligence? Children who take music lessons must practice regularly, engage in extended focused attention, read music, memorize lengthy musical passages, understand diverse musical structures, and master technical skills. These experiences might foster cognitive processing, particularly during childhood, when regions of the brain are taking on specialized functions and are highly plastic—sensitive to environmental influences.

Schellenberg recruited 132 6-year-olds—children just old enough for formal lessons. First, the children took an intelligence test and were rated on social maturity, permitting the researchers to see whether music lessons would affect one aspect of development but not the others. Next, the children were randomly assigned to one of four experimental conditions. Two were music groups; one received piano lessons and the other voice lessons. The third group took drama lessons—a condition that shed light on whether intellectual gains were unique to musical experiences. The fourth group—a no-lessons control—was offered music lessons the following year. Music and drama instruction took place at the prestigious Royal Conservatory of Music in Toronto, where experienced teachers taught the children in small groups. After 36 weeks of lessons, a longitudinal follow-up was conducted: The children’s intelligence and social maturity were assessed again.

All four groups showed gains in mental test performance, probably because the participants had just entered grade school, which usually leads to an



**FIGURE 1.8 Music lessons promote gains in intelligence.** In a study that combined experimental and longitudinal research strategies, children’s mental test performance was tracked longitudinally, before and after they experienced one of four conditions: (1) piano lessons, (2) voice lessons, (3) drama lessons, and (4) no lessons. Children in the two groups receiving music lessons showed greater gains in test scores.

increase in intelligence test scores. But the two music groups consistently gained more than the drama and no-lessons groups (see Figure 1.8). Their advantage, though just a few points, extended across many mental abilities, including verbal and spatial skills and speed of thinking. At the same time, only the drama group improved in social maturity.

In sum, active, sustained musical experiences can lead to small increases in intelligence among 6-year-olds that do not arise from comparable drama lessons. But other enrichment activities with similar properties, such as reading, science, math, and chess programs, may confer similar benefits. All demand that children invest far more time and effort than they would in listening to a Mozart sonata. Nevertheless—despite the absence of evidence to support these claims—music companies persist in selling CDs entitled, “Tune Your Brain with Mozart,” “Music for Accelerating Learning,” and “Mozart for Newborns: A Bright Beginning.”

## Ethics in Lifespan Research

Research into human behavior creates ethical issues because, unfortunately, the quest for scientific knowledge can sometimes exploit people. For this reason, special guidelines for research have been developed by the federal government, by funding agencies, and by research-oriented associations, such as the American Psychological Association (2002), the Canadian Psychological Association (2000), and the Society for Research in Child Development (1993). Table 1.8 presents a summary of basic research rights drawn from these guidelines. After examining them, read about the following research situations, each of which poses a serious ethical dilemma. What precautions do you think should be taken in each instance?

In a study of moral development, an investigator wants to assess children's ability to resist temptation by videotaping their behavior without their knowledge. She promises 7-year-olds a prize for solving difficult puzzles but tells them not to look at a classmate's correct solutions, which are deliberately placed at the back of the room. Informing children ahead of time that cheating is being studied or that their behavior is being monitored will destroy the purpose of the study.

A researcher wants to study the impact of mild daily exercise on the physical and mental health of elderly patients in nursing homes. He consults each resident's doctor to make sure that the exercise routine will not be harmful. But when he seeks the residents' consent, he finds that many do not comprehend the purpose of the research. And some appear to agree simply to relieve feelings of isolation and loneliness.

As these examples indicate, when children or the aged take part in research, the ethical concerns are especially complex. Immaturity makes it difficult or impossible for children to evaluate for themselves what participation in research will mean. And because mental impairment rises with very advanced age, some older adults cannot make voluntary and informed choices. The life circumstances of others make them unusually vulnerable to pressure for participation (Kim et al., 2004; Society for Research in Child Development, 1993).

Virtually every organization that has devised ethical principles for research has concluded that conflicts arising in research situations often cannot be resolved with simple right-or-wrong answers. The ultimate responsibility for the ethical integrity of research lies with the investigator. However, researchers are advised—and usually required—to seek advice from others. Colleges, universities, and other institutions have special committees for this purpose. These *institutional review*

**Table 1.8**
**Rights of Research Participants**

Research Right	Description
Protection from harm	Participants have the right to be protected from physical or psychological harm in research. If in doubt about the harmful effects of research, investigators should seek the opinion of others. When harm seems possible, investigators should find other means for obtaining the desired information or abandon the research.
Informed consent	All participants, including children and the elderly, have the right to have explained to them, in language appropriate to their level of understanding, all aspects of the research that may affect their willingness to participate. When children are participants, informed consent of parents as well as of others who act on the child's behalf (such as school officials) should be obtained, preferably in writing. Older adults who are cognitively impaired should be asked to appoint a surrogate decision maker. If they cannot do so, then someone should be named by an institutional review board (IRB) after careful consultation with relatives and professionals who know the person well. All participants have the right to discontinue participation in the research at any time.
Privacy	Participants have the right to concealment of their identity on all information collected in the course of research. They also have this right with respect to written reports and any informal discussions about the research.
Knowledge of results	Participants have the right to be informed of the results of research in language that is appropriate to their level of understanding.
Beneficial treatments	If experimental treatments believed to be beneficial are under investigation, participants in control groups have the right to alternative beneficial treatments if they are available.

Sources: American Psychological Association, 2002; Canadian Psychological Association, 2000; Society for Research in Child Development, 1993.

boards (IRBs) weigh the costs of the research to participants in terms of inconvenience and possible psychological or physical injury against the study's value for advancing knowledge and improving conditions of life. If there are any risks to participants' safety and welfare that the research does not justify, then preference is always given to the participants' interests.

The ethical principle of *informed consent* requires special interpretation when participants cannot fully appreciate the research goals and activities. Parental consent is meant to protect the safety of children, whose ability to decide is not yet mature. By age 7, children's own informed consent should be obtained in addition to parental consent. Around this age,



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Older adults should not be arbitrarily excluded from research. Most require only the typical informed-consent procedures, and their participation brings both personal and scientific benefits. For elders who are cognitively impaired—like this man with Alzheimer's disease—informed consent may not be possible without the assistance of a surrogate decision maker.

changes in children's thinking permit them to better understand simple scientific principles and the needs of others. Researchers should respect and enhance these new capacities by giving school-age children a full explanation of research activities in language they can understand (Fisher, 1993). Extra care must be taken when telling children that the information they provide will be kept confidential and that they can end their participation at any time. Even adolescents may not understand, and sometimes do not believe, these promises (Bruzzese & Fisher, 2003; Ondrusek et al., 1998).

Most older adults require no more than the usual informed-consent procedures. Yet many investigators set upper age limits in studies relevant to the elderly, thereby excluding the oldest adults (Bayer & Tadd, 2000). The elderly should not be stereotyped as incompetent to decide about their own participation or to engage in research activities. Nevertheless, extra measures must be taken to protect those who are cognitively impaired or who reside in settings for the chronically ill. As noted, some individuals may agree to participate simply to engage in rewarding social interaction. Yet participation should not be automatically withheld, since it can result in personal as well as scientific benefits. In these instances, potential participants should be asked to appoint a surrogate decision maker. If they cannot do so, then someone should be named by an IRB after careful consultation with relatives and professionals who know the person well. As an added precaution, if the elderly person is incapable of consenting and the risks of the research are more than minimal, then the study should not be done unless it is likely to directly benefit the participant (Kim et al., 2004).

Finally, all ethical guidelines advise that special precautions be taken in the use of deception and concealment, as occurs when researchers observe people from behind one-way mirrors, give them false feedback about their performance, or do not tell them the truth regarding what the research is about. When these kinds of procedures are used, *debriefing*, in which the investigator provides a full account and justification of the activities, occurs after the research session is over. Debriefing should also be done with children, but it rarely works well. Despite explanations, children may leave the research situation with their belief in the honesty of adults undermined. Ethical standards permit deception if investigators satisfy institutional committees that such practices are necessary. Nevertheless, because deception may have serious emotional consequences for some youngsters, investigators should try to come up with other research strategies when children are involved.



# Summary

## Human Development as a Scientific, Applied, and Interdisciplinary Field

What is human development, and what factors stimulated expansion of the field?

- Human development is an interdisciplinary field devoted to understanding human constancy and change throughout the lifespan. Research on human development has been stimulated by both scientific curiosity and social pressures to improve people's lives.

### Basic Issues

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

- Each theory of human development take a stand on three basic issues: (1) Is development a **continuous** process, or does it proceed in a series of **discontinuous stages**? (2) Does one general course of development characterize all individuals, or do many possible courses exist, depending on children's and adult's **contexts**? (3) Is development determined primarily by **nature** or by **nurture**, and is it stable or open to change?

### The Lifespan Perspective: A Balanced Point of View

Describe the lifespan perspective on development.

- The **lifespan perspective** is a balanced view that recognizes great complexity in human change and the factors that underlie it. In this view, development is lifelong, multidimensional (affected by biological, psychological, and social forces), multidirectional (a joint expression of growth and decline), and plastic (open to change through new experiences), as research on **resilience** illustrates.
- Furthermore, the lifespan perspective regards the life course as influenced by multiple, interacting forces that can be organized into three categories: (1) **age-graded influences** that are predictable in timing and duration; (2) **history-graded**

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**influences**, unique to a particular historical era; and (3) **nonnormative influences**, which are unique to one or a few individuals.

### Historical Foundations

Describe major historical influences on theories of development.

- Contemporary theories of human development have roots in the distant past. As early as medieval Europe, childhood was viewed as a distinct phase of life, separate from adulthood. The sixteenth-century Puritan belief in original sin led to a harsh philosophy of child rearing, but in the seventeenth century, the ideas of the Enlightenment promoted more humane child treatment.
- Locke's view of the child as a **tabula rasa** ("blank slate") formed the basis of twentieth-century behaviorism, while Rousseau's idea of children as **noble savages** foreshadowed the concepts of stage and **maturiation**.
- In the eighteenth and early nineteenth centuries, German philosophers Tetens and Carus extended conceptions of development through adulthood, anticipating many aspects of today's lifespan perspective.
- Darwin's theory of evolution influenced important modern theories and inspired scientific child study. In the early twentieth century, Hall and Gesell introduced the **normative approach**, which produced a large body of descriptive facts about development. Binet and Simon constructed the first successful intelligence test, initiating the mental testing movement.

### Mid-Twentieth-Century Theories

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

- In the 1930s and 1940s, psychiatrists and social workers turned to the **psychoanalytic perspective** for help in treating people's emotional problems. In Freud's **psychosexual theory**, the individual moves through five stages, during which three portions of the personality—id, ego, and superego—become integrated. Erikson's **psychosocial theory** expands Freud's theory by emphasizing the development of culturally relevant attitudes and skills and the lifespan nature of development.
- As psychoanalytic theory gained in prominence, **behaviorism** and **social learning theory** emerged, emphasizing principles of conditioning and modeling and practical procedures of **behavior modification** to eliminate undesirable behaviors and increase desirable responses.
- In contrast to behaviorism, Piaget's **cognitive-developmental theory** emphasizes an active individual whose mind consists of rich structures of knowledge. According to Piaget, children move through four stages, from the baby's sensorimotor action patterns to the elaborate, abstract reasoning system of the adolescent. Although some of Piaget's conclusions have been challenged, his work has had an overwhelming impact, stimulating a wealth of research on children's thinking and encouraging educational philosophies and programs that emphasize discovery learning.

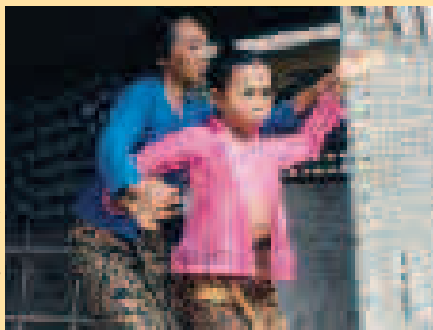
### Recent Theoretical Perspectives

Describe recent theoretical perspectives on human development.

- Information processing** views the mind as a complex, symbol-manipulating system much like a computer and views development as a matter of continuous change. This approach helps investigators achieve a detailed understanding of what individuals of different ages do when faced with tasks and problems. Its findings have important implications for education.

- Over the past two decades, researchers in **developmental cognitive neuroscience**, who study the relationship between changes in the brain and the development of cognitive processing and behavior patterns, have made progress in identifying the types of experiences to which the brain is sensitive at various ages.
- Three contemporary perspectives emphasize contexts of development. **Ethology**, which stresses the evolutionary origins and adaptive value of behavior, inspired the **sensitive period** concept. In **evolutionary developmental psychology**, researchers have extended this emphasis, seeking to understand the adaptiveness of specieswide competencies as they change over time.
- Vygotsky's **sociocultural theory** has enhanced our understanding of cultural influences, especially in the area of cognitive development. Through cooperative dialogues with more expert members of society, children come to use language to guide their own thought and actions and acquire culturally relevant knowledge and skills.

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- In **ecological systems theory**, nested layers of the environment—**microsystem**, **mesosystem**, **exosystem**, and **macrosystem**—are seen as major influences on the developing person. The **chronosystem** represents the dynamic, ever-changing nature of individuals and their experiences.

## Comparing and Evaluating Theories

*Identify the stand taken by each major theory on the three basic issues of human development.*

- Theories vary in their focus on different domains of development, in their view of development, and in their strengths and limitations. (For a full summary, see Table 1.5 on page 26.)

## Studying Development

*Describe methods commonly used in research on human development.*

- Naturalistic observations**, gathered in everyday environments, permit researchers to see directly the everyday behaviors they hope to explain. In contrast, **structured observations** take place in laboratories, where every participant has an equal opportunity to display the behaviors of interest.

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- Self-report methods can be flexible and open-ended, as in the **clinical interview**. Alternative methods include **structured interviews**, tests, and questionnaires, which permit efficient administration and scoring. Investigators use the **clinical**, or **case study**, **method** to gain an in-depth understanding of a single individual.
- A growing interest in the impact of culture has prompted researchers to adapt observational and self-report methods to permit cultural comparisons. **Ethnography**, a method borrowed from the field of anthropology, uses participant observation to understand the unique values and social processes of a culture or distinct social group.

*Distinguish correlational and experimental research designs, noting the strengths and limitations of each.*

- The **correlational design** examines relationships between variables as they occur, without altering people's experiences. The **correlation coefficient** is often used to measure the association between variables. Correlational studies do not permit inferences about cause and effect. Their use is justified when it is difficult or impossible to control the variables of interest.
- An **experimental design** permits inferences about cause and effect. Researchers manipulate an **independent variable** by exposing participants to two or more treatment conditions. Then they determine what effect

this variable has on a **dependent variable**. **Random assignment** reduces the chances that participant characteristics will affect the accuracy of experimental findings.

- To achieve high degrees of control, most experiments are conducted in laboratories, but their findings may not apply to everyday life. Field and natural experiments compare treatments in natural environments. These approaches, however, are less rigorous than laboratory experiments.

*Describe designs for studying development, noting the strengths and limitations of each.*

- The **longitudinal design** permits study of common patterns as well as individual differences in development and of the relationship between early and later events and behaviors. Longitudinal research poses several problems for researchers, including biased samples, participant dropout, practice effects, and **cohort effects**—difficulty generalizing to people developing in other historical times.
- The **cross-sectional design** is an efficient way to study development, but it is limited to comparisons of age-group averages. Findings of cross-sectional studies also can be distorted by cohort effects, especially when they cover a wide age span.
- To overcome some of the limitations of these designs, investigators sometimes combine the two approaches. The **sequential design**, in which researchers conduct several similar cross-sectional or longitudinal studies at varying times, permits investigators to test for cohort effects and to compare longitudinal and cross-sectional findings. When researchers combine experimental and developmental designs, they can examine causal influences on development.

## Ethics in Lifespan Research

*What special ethical concerns arise in research on human development?*

- Research creates ethical issues, since the quest for scientific knowledge has the potential to exploit people. The ethical principle of informed consent requires special safeguards for children and for elderly people who are cognitively impaired or who live in settings for the care of the chronically ill. The use of deception in research with children is especially risky because it may undermine their basic faith in the trustworthiness of adults.

## Important Terms and Concepts

- age-graded influences (p. 10)  
 behavior modification (p. 18)  
 behaviorism (p. 17)  
 chronosystem (p. 25)  
 clinical interview (p. 28)  
 clinical, or case study, method (p. 29)  
 cognitive-developmental theory (p. 19)  
 cohort effects (p. 35)  
 contexts (p. 7)  
 continuous development (p. 6)  
 correlation coefficient (p. 32)  
 correlational design (p. 30)  
 cross-sectional design (p. 35)  
 dependent variable (p. 32)  
 developmental cognitive neuroscience  
 (p. 21)  
 discontinuous development (p. 6)  
 ecological systems theory (p. 24)  
 ethnography (p. 30)  
 ethology (p. 22)  
 evolutionary developmental psychology  
 (p. 22)  
 exosystem (p. 25)  
 experimental design (p. 32)  
 history-graded influences (p. 11)  
 human development (p. 5)  
 independent variable (p. 32)  
 information processing (p. 20)  
 lifespan perspective (p. 8)  
 longitudinal design (p. 33)  
 macrosystem (p. 25)  
 maturation (p. 13)  
 mesosystem (p. 24)  
 microsystem (p. 24)  
 naturalistic observation (p. 27)  
 nature–nurture controversy (p. 7)  
 noble savage (p. 13)  
 nonnormative influences (p. 11)  
 normative approach (p. 14)  
 psychoanalytic perspective (p. 15)  
 psychosexual theory (p. 15)  
 psychosocial theory (p. 15)  
 random assignment (p. 33)  
 resilience (p. 10)  
 sensitive period (p. 22)  
 sequential design (p. 35)  
 social learning theory (p. 18)  
 sociocultural theory (p. 23)  
 stage (p. 6)  
 structured interview (p. 29)  
 structured observation (p. 27)  
 tabula rasa (p. 13)  
 theory (p. 5)