

# Child Development

N I N T H   E D I T I O N

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**Laura E. Berk**

*Illinois State University*

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**“Untitled”**

Patrick, 15 years, New Mexico

This artist represents his Taos Pueblo culture with intricate patterns and rainbows of color. As the theories reviewed in this chapter reveal, a similarly complex blend of genetic, family, community, and societal forces influences child development.

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# History, Theory, and Applied Directions

**N**ot long ago, I left my Midwestern home to live for a year near the small city in northern California where I spent my childhood. One morning, I visited the neighborhood where I grew up—a place I had not seen since I was 12 years old.

I stood at the entrance to my old schoolyard. Buildings and grounds that had looked large to me as a child now seemed strangely small. I peered through the window of my first-grade classroom. The desks were no longer arranged in rows but grouped in intimate clusters. Computers rested against the far wall, near where I once sat. I walked my old route home from school, the distance shrunken by my longer stride. I stopped in front of my best friend Kathryn's house, where we once drew sidewalk pictures, crossed the street to play kickball, and produced plays in the garage. In place of the small shop where I had purchased penny candy stood a child-care center, filled with the voices and vigorous activity of toddlers and preschoolers.

As I walked, I reflected on early experiences that contributed to who I am and what I am like today—weekends helping my father in his downtown clothing shop, the year my mother studied to become a high school teacher, moments of companionship and rivalry with my sister and brother, Sunday outings to museums and the seashore, and visits to my grandmother's house, where I became someone extra special.

As I passed the homes of my childhood friends, I thought of what I knew about the course of their lives. Kathryn, star pupil and president of our sixth-grade class—today a successful corporate lawyer and mother of two. Shy, withdrawn Phil, cruelly teased because of his cleft lip—now owner of a thriving chain of hardware stores and member of the city council. Julio, immigrant from Mexico who joined our class in third grade—today director of an elementary school bilingual education program and single parent of an adopted Mexican boy. And finally, my next-door neighbor Rick, who picked fights at recess, struggled with reading, repeated fourth grade, dropped out of high school, and (so I heard) moved from one job to another over the following 10 years.

As you begin this course in child development, perhaps you, too, are wondering about some of the same questions that crossed my mind during that nostalgic neighborhood walk:

- In what ways are children's home, school, and neighborhood experiences the same today as they were in generations past, and in what ways are they different?
- How are the infant's and young child's perceptions of the world the same as the adult's, and how are they different?
- What determines the features that humans have in common and those that make each of us unique—physically, mentally, and behaviorally?
- How did Julio, transplanted at age 8 to a new culture, master its language and customs and succeed in its society, yet remain strongly identified with his ethnic community?
- Why do some of us, like Kathryn and Rick, retain the same styles of responding that characterized us as children, whereas others, like Phil, change in essential ways?
- How do cultural changes—employed mothers, child care, divorce, smaller families, and new technologies—affect children's characteristics?



## The Field of Child Development

Domains of Development • Periods of Development

### Basic Issues

Continuous or Discontinuous Development? • One Course of Development or Many? • Relative Influence of Nature and Nurture? • A Balanced Point of View

### ■ BIOLOGY AND ENVIRONMENT:

*Resilient Children*

### Historical Foundations

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### ■ CULTURAL INFLUENCES: *!Kung*

*Infancy: Acquiring Culture*

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### Comparing Child Development Theories

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### ■ SOCIAL ISSUES: HEALTH: *Welfare*

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These are central questions addressed by **child development**, an area of study devoted to understanding constancy and change from conception through adolescence. Child development is part of a larger, interdisciplinary field known as **developmental science**, which includes all changes we experience throughout the lifespan (Lerner, 2006). Great diversity characterizes the interests and concerns of the thousands of investigators who study child development. But all have a common goal: to describe and identify those factors that influence the consistencies and changes in young people during the first two decades of life. ■

- ▶ What is the field of child development, and what factors stimulated its expansion?
- ▶ How is child development typically divided into domains and periods?

## The Field of Child Development

The questions just listed are not just of scientific interest. Each has *applied*, or practical, importance as well. In fact, scientific curiosity is just one factor that led child development to become the exciting field of study it is today. Research about development has also been stimulated by social pressures to improve the lives of children. 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. Pediatricians' interest in improving children's health required an understanding of physical growth and nutrition. The social service profession's desire to treat children's anxieties and behavior problems required information about personality and social development. And parents have continually sought advice about child-rearing practices and experiences that would promote their children's development and well-being.

Our large storehouse of information about child development is *interdisciplinary*. It has grown through the combined efforts of people from many fields. Because of the need to solve everyday problems concerning children, researchers from psychology, sociology, anthropology, biology, and neuroscience have joined forces with professionals from education, family studies, medicine, public health, and social service—to name just a few. The field of child development, as it exists today, is a monument to the contributions of these many disciplines. Its body of knowledge is not just scientifically important but also relevant and useful.

### Domains of Development

To make the vast, interdisciplinary study of human constancy and change more orderly and convenient, development is often divided into three broad domains: *physical*, *cognitive*, and *emotional and social*. Refer to Figure 1.1 for a description and illustration of each. In this book, we will largely consider the domains of development in the order just mentioned. Yet the domains are not really distinct. Rather, they combine in an integrated, holistic fashion to yield the living, growing child. Furthermore, each domain influences and is influenced by the others. For example, in Chapter 4, you will see that new motor capacities, such as reaching, sitting, crawling, and walking (physical), contribute greatly to infants' understanding of their surroundings (cognitive). When babies think and act more competently, adults stimulate them more with games, language, and expressions of delight at their new achievements (emotional and social). These enriched experiences, in turn, promote all aspects of development.

You will encounter instances of the interwoven nature of all domains on almost every page of this book. In the margins of the text, you will find occasional *Look and Listen* activities—opportunities for you to see everyday illustrations of development by observing what real children say and do or by attending to everyday influences on children. Through these experiences, I hope to make your study of development more authentic and meaningful.





**FIGURE 1.1 Major domains of development.** The three domains are not really distinct. Rather, they overlap and interact.

Also, look for the *Ask Yourself* feature at the end of major sections, designed to deepen your understanding. Within it, I have included *Review* questions, which help you recall and think about information you have just read; *Connect* questions, which help you form a coherent, unified picture of child development; *Apply* questions, which encourage you to apply your knowledge to controversial issues and problems faced by parents, teachers, and children; and *Reflect* questions, which invite you to reflect on your own development and that of people you know well.

## Periods of Development

Besides distinguishing and integrating the three domains, another dilemma arises in discussing development: how to divide the flow of time into sensible, manageable parts. Researchers usually use the following age periods, as each brings new capacities and social expectations that serve as important transitions in major theories:

1. *The prenatal period: from conception to birth.* In this nine-month period, the most rapid time of change, a one-celled organism is transformed into a human baby with remarkable capacities for adjusting to life in the surrounding world.
2. *Infancy and toddlerhood: from birth to 2 years.* This period brings dramatic changes in the body and brain that support the emergence of a wide array of motor, perceptual, and intellectual capacities; the beginnings of language; and first intimate ties to others. Infancy spans the first year; toddlerhood spans the second, during which children take their first independent steps, marking a shift to greater autonomy.
3. *Early childhood: from 2 to 6 years.* The body becomes longer and leaner, motor skills are refined, and children become more self-controlled and self-sufficient. Make-believe play blossoms, supporting every aspect of psychological development. Thought and language





Child development is so dramatic that researchers divide it into periods. This large family of the Ivory Coast includes children in infancy, early childhood (boy in front row, girl seated in second row), middle childhood (girl in front row, girl standing in second row), and adolescence (girl standing in center).

For many contemporary youths in industrialized nations, the transition to adult roles has become increasingly prolonged—so much so that some researchers have posited a new period of development called *emerging adulthood*, which spans ages 18 to 25. Although emerging adults have moved beyond adolescence, they have not yet fully assumed adult roles. Rather, during higher education and sometimes beyond, these young people intensify their exploration of options in love, career, and personal values before making enduring commitments. Because emerging adulthood first became apparent during the past few decades, researchers have just begun to study it (Arnett, 2007; Arnett & Tanner, 2006). Perhaps it is *your* period of development. In later chapters, we will touch on milestones of emerging adulthood, which build on adolescent attainments. To find out more about this period, consult the mini-chapter entitled “Emerging Adulthood,” available as an online supplement to this text.

With this introduction in mind, let’s turn to some basic issues that have captivated, puzzled, and sparked debate among child development theorists. Then our discussion will trace the emergence of the field and survey major theories.

## Basic Issues

Research on child development did not begin until the late nineteenth and early twentieth centuries. But ideas about how children grow and change have a much longer history. As these speculations 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 around 6 to 8 months of age as they seek the affection and comfort of a familiar adult, (2) *explain* how and why infants develop this strong desire to bond with a caregiver, and (3) *predict* the consequences of this emotional bond for future relationships.

Theories are vital tools for two reasons. First, they provide organizing frameworks for our observations of children. In other words, they *guide and give meaning* to what we see. Second, theories that are verified by research often serve as 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.

expand at an astounding pace, a sense of morality becomes evident, and children establish ties with peers.

4. *Middle childhood: from 6 to 11 years.* Children learn about the wider world and master new responsibilities that increasingly resemble those they will perform as adults. Hallmarks of this period are improved athletic abilities; participation in organized games with rules; more logical thought processes; mastery of fundamental reading, writing, math, and other academic knowledge and skills; and advances in understanding the self, morality, and friendship.
5. *Adolescence: from 11 to 18 years.* This period initiates the transition to adulthood. Puberty leads to an adult-sized body and sexual maturity. Thought becomes abstract and idealistic, and schooling is increasingly directed toward preparation for higher education and the world of work. Young people begin to establish autonomy from the family and to define personal values and goals.

- ▶ Identify three basic issues on which child development theories take a stand.



As we will see later, theories are influenced by cultural values and belief systems of their times. But theories differ in one important way from mere opinion and belief: A theory's continued existence depends on *scientific verification*. This means that the theory must be tested using a fair set of research procedures agreed on by the scientific community, and its findings must endure, or be replicated over time. (We will consider research strategies in Chapter 2.)

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

Although there are many theories, we can easily organize them by looking at the stand they take on three basic issues: (1) Is the course of development continuous or discontinuous? (2) Does one course of development characterize all children, or are there many possible courses? (3) What are the roles of genetic and environmental factors—nature and nurture—in development? Let's look closely at each of these issues.

## Continuous or Discontinuous Development?

Recently, the mother of 20-month-old Angelo reported to me with amazement that her young son had pushed a toy car across the living room floor while making a motorlike sound, “Brrrrrr, brrrrrr,” for the first time. When he hit a nearby wall with a bang, Angelo let go of the car, exclaimed, “C’ash,” and laughed heartily.

“How come Angelo can pretend, but he couldn't a few months ago?” his mother asked. “And I wonder what ‘Brrrrrr, brrrrrr’ and ‘Crash!’ mean to Angelo? Does he understand motorlike sounds and collision the same way I do?”

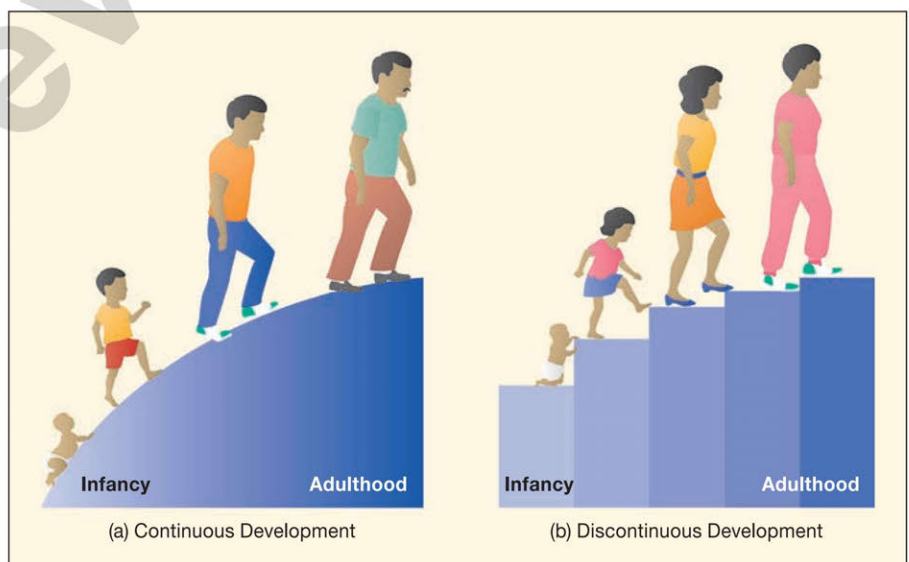
Angelo's mother has raised a puzzling issue about development: How can we best describe the differences in capacities and behavior among small infants, young children, adolescents, and adults? As Figure 1.2 illustrates, major theories recognize two possibilities.

One view holds that infants and preschoolers respond to the world in much the same way as adults do. The difference between the immature and the mature being is simply one of *amount or complexity*. For example, little Angelo's thinking might be just as logical and well-organized as our own. Perhaps (as his mother reports) he can sort objects into simple categories, recognize whether he has more of one kind than another, and remember where he left his favorite toy at child care the week before. Angelo's only limitation may be that he cannot perform these skills with as much information and precision as we can. If this is so, then Angelo's development is **continuous**—a process of gradually adding more of the same types of skills that were there to begin with.

According to a second view, Angelo's thoughts, emotions, and behavior differ considerably from those of adults. His development is **discontinuous**—a process in which new ways of understanding and responding to the world emerge at specific times. From this perspective, Angelo is not yet able to

**FIGURE 1.2** Is development continuous or discontinuous?

(a) Some theorists believe that development is a smooth, continuous process. Children gradually add more of the same types of skills.  
(b) Other theorists think that development takes place in discontinuous stages. Children change rapidly as they step up to a new level of development and then change very little for a while. With each step, the child interprets and responds to the world in a qualitatively different way.





organize objects or remember and interpret experiences as we do. Instead, he will move through a series of developmental steps, each with unique features, until he reaches 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 much like climbing a staircase, with each step corresponding to a more mature, reorganized way of functioning. The stage concept also assumes that children undergo periods of rapid transformation as they step up from one stage to the next, alternating with plateaus during which they stand solidly within a stage. In other words, change is fairly sudden rather than gradual and ongoing.

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

## One Course of Development or Many?

Stage theorists assume that people everywhere follow the same sequence of development. For example, in the domain of cognition, a stage theorist might try to identify the common influences that lead children to represent their world through language and make-believe play in early childhood, to think more logically in middle childhood, and to reason more systematically and abstractly in adolescence.

At the same time, the field of child development is becoming increasingly aware that children grow up in distinct **contexts**—unique combinations of personal and environmental circumstances that can result in different paths of change. For example, a shy child who fears

social encounters develops in very different contexts from those of a sociable age-mate who readily seeks out other people (Kagan, 2003, 2008). Children in non-Western village societies encounter experiences in their families and communities that differ sharply from those of children in large Western cities. These different circumstances foster different cognitive capacities, social skills, and feelings about the self and others (Shweder et al., 2006).

As you will see, contemporary theorists regard the contexts that mold development as many-layered and complex. On the personal side, these include heredity and biological makeup. On the environmental side, they include both immediate settings—home, child-care center, school, and neighborhood—and circumstances that are more remote from children's everyday lives: community resources, societal values and priorities, and historical time period. Finally, researchers today are more conscious than ever before of cultural diversity in development.

## Relative Influence of Nature and Nurture?

In addition to describing the course of development, each theory takes a stand on a major question about its underlying causes: Are genetic or environmental factors more important in influencing development? 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 roles to both nature and nurture, they vary in emphasis. Consider the following questions: Is the older child'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 because they are



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Will this toddler's tantrums extend into a lifelong pattern of difficult behavior? Some theorists, stressing the importance of heredity, believe she will remain hard to manage. Others think that change is possible, depending on how the mother handles her child's emotional outbursts.



genetically predisposed to do so or because parents intensively teach them from an early age? And what accounts for the vast individual differences among children—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. Some theorists emphasize *stability*—that children who are high or low in a characteristic (such as verbal ability, anxiety, or sociability) will remain so at later ages. These theorists typically stress the importance of *heredity*. If they regard environment as important, they usually point to *early experiences* as establishing a lifelong pattern of behavior. Powerful negative events in the first few years, they argue, cannot be fully overcome by later, more positive ones (Bowlby, 1980; Johnson, 2000; Sroufe, 2005). Other theorists, taking a more optimistic view, see development as having substantial **plasticity** throughout life—as open to change in response to influential experiences (Baltes, Lindenberger, & Staudinger, 2006; Lerner & Overton, 2008; Lester, Masten, & McEwen, 2006).

Throughout this book, you will see that investigators disagree, often sharply, on the question of *stability versus plasticity*. Their answers have great applied significance. If you believe that development is largely due to nature, then providing experiences aimed at promoting change would seem to be of little value. If, on the other hand, you are convinced of the supreme importance of early experience, then you would intervene as soon as possible, offering high-quality stimulation and support to ensure that children develop at their best. Finally, if you think that environment is profoundly influential throughout development, you would provide assistance any time children or adolescents face difficulties, in the belief that, with the help of favorable life circumstances, they can recover from early negative events.

## A Balanced Point of View

So far, we have discussed the basic issues of child development in terms of extremes—solutions favoring one side or the other. But as we trace the unfolding of the field in the rest of this chapter, you will see that the positions of many theorists have softened. Today, some theorists believe that both continuous and discontinuous changes occur. Many acknowledge that development has both universal features and features unique to each individual and his or her contexts. And a growing number regard heredity and environment as inseparably interwoven, each affecting the potential of the other to modify the child's traits and capacities (Cole, 2006; Gottlieb, Wahlsten, & Lickliter, 2006; Lerner, 2006; Rutter, 2007). We will discuss these new ideas about nature and nurture in Chapter 3.

Finally, as you will see later in this book, the relative impact of early and later experiences varies greatly from one domain of development to another and even—as the Biology and Environment box on pages 10–11 indicates—across individuals! Because of the complex network of factors contributing to human change and the challenge of isolating the effects of each, many theoretical viewpoints have gathered research support. Although debate continues, this circumstance has also sparked more balanced visions of child development.

## ASK YOURSELF

**Review** ■ What is meant by a *stage* of development? Provide your own example of stagewise change. What stand do stage theorists take on the issue of continuous versus discontinuous development?

**Connect** ■ Provide an example of how one domain of development (physical, cognitive, or emotional/social) can affect development in another domain.

**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.

**Reflect** ■ Cite an aspect of your development that differs from a parent's or grandparent's when he or she was your age. How might *contexts* explain this difference?



## BIOLOGY and ENVIRONMENT

### Resilient Children

John and his best friend, Gary, grew up in a run-down, 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 their paths diverged. By age 30, John had fathered two children with women he never married, had spent time in prison, was unemployed, and drank alcohol heavily. In contrast, Gary had returned to finish high school, had studied auto mechanics at a community college, and 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 & Gewirtz, 2006; Sameroff, 2006; Wadsworth & Santiago, 2008). Why did Gary “beat the odds” and come through unscathed? Research on **resilience**—the ability to adapt effectively in the face of threats to development—is receiving increasing attention as

investigators look for ways to protect young people from the damaging effects of stressful life conditions. This interest has been inspired by several long-term studies on the relationship of life stressors in childhood to competence and adjustment in adolescence and adulthood (Fergusson & Horwood, 2003; 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 talents (in music or athletics, for example) increase the chances that a child will have rewarding experiences in school and in the community that offset the impact of a stressful home life. Temperament is particularly powerful.



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This boy’s close, affectionate relationship with his father promotes resilience. A strong bond with at least one parent who combines warmth with appropriate expectations for maturity can shield children from the damaging effects of stressful life conditions.

- Describe major historical influences on theories of child development.

## Historical Foundations

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

### Medieval Times

Childhood was regarded as a separate period of life as early as medieval Europe—the sixth through the fifteenth centuries. Medieval painters often depicted children wearing loose, comfortable gowns, playing games, and looking up to adults. Written texts contained terms that distinguished children under age 7 or 8 from other people and that recognized even young teenagers as not fully mature. By the fourteenth century, manuals offering advice on many aspects of child care, including health, feeding, clothing, and games, were common



Children who have easygoing, sociable dispositions and who can readily inhibit negative emotions and impulses tend to have an optimistic outlook on life and a special capacity to adapt to change—qualities that elicit positive responses from others. In contrast, emotionally reactive and irritable children often tax the patience of people around them (Mathiesen & Prior, 2006; Vanderbilt-Adriance & Shaw, 2008; Wong et al., 2006). 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 (Masten & Shaffer, 2006; Taylor, 2010). But 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; Gulotta, 2008).

### Social Support Outside the Immediate Family

The most consistent asset of resilient children is a strong bond with a competent, caring adult. For children who do not have a close bond with either parent, a grandparent, aunt, uncle, or teacher who forms a special relationship with the child can promote resilience (Masten & Reed, 2002). Gary received support from his grandfather, who listened to Gary's concerns and helped him solve problems. 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 (Tiet, Huizinga, & Byrnes, 2010). 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 participants acquire these competencies, they gain in self-reliance, self-esteem, and community commitment (Benson et al., 2006). As a college student, Gary volunteered for Habitat for Humanity, joining a team building affordable housing in low-income neighborhoods. Community involvement offered Gary additional opportunities to form meaningful relationships, which further strengthened his resilience.

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

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

(Alexandre-Bidon & Lett, 1997; 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 (Hanawalt, 1993).

In sum, in medieval times, if not before, clear awareness existed of children as vulnerable beings. Religious writings, however, contained contradictory depictions of 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.

## The Reformation

In the sixteenth century, the Puritan belief in original sin gave rise to the view that children were born evil and stubborn and had to be civilized (Shahar, 1990). Harsh, restrictive child-rearing practices were recommended to tame the depraved child. Children were dressed in stiff, uncomfortable clothing that held them in adultlike postures, and disobedient students were routinely beaten by their schoolmasters. Nevertheless, love and affection for their children prevented most Puritan parents from using extremely repressive measures (Moran & Vinovskis, 1986).





KUNSTHISTORISCHES MUSEUM, VIENNA. AUSTRIA/ALI MEYER/ THE BRIDGEMAN ART LIBRARY INTERNATIONAL

As early as medieval times, adults viewed childhood as a distinct developmental period. In this sixteenth-century painting, *Children's Games*, by Pieter Bruegel the Elder, boys and girls wearing loose, comfortable clothing play lively outdoor games. [*Children's Games (Kinderspiele)*: Detail of top right-hand corner, 1560 (oil on panel) (detail of 68945), Bruegel, Pieter the Elder (c. 1525–69).]

As the Puritans emigrated from England to the New World, they brought the belief that child rearing was one of their most important obligations. Although they continued to regard the child's soul as tainted by original sin, they tried to teach their sons and daughters to use reason to tell 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.

## Philosophies of the Enlightenment

The seventeenth-century Enlightenment brought new philosophies that emphasized ideals of human dignity and respect. Conceptions of childhood were more humane than those of the past.

**John Locke** 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 begin as nothing at all; their characters are shaped entirely by experience. Locke (1690/1892) saw parents as rational tutors who can mold the child in any way they wish through careful instruction, effective example, and rewards for good behavior. He was ahead of his time in recommending child-rearing practices that present-day research supports—for example, the use of praise and approval as rewards, rather than money or sweets. He also opposed physical punishment: “The child repeatedly beaten in school cannot look upon books and teachers without experiencing fear and anger.” Locke's 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 *high plasticity at later ages* due to new experiences. Finally, Locke's philosophy characterizes children as doing little to influence their own destiny; rather, the child is the “blank slate” on which others write. This vision of a passive child has been discarded. All contemporary theories view children 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) introduced a new view of childhood. Children, Rousseau claimed, are not blank slates or empty containers to be filled by adult instruction. Instead, they are *noble savages*, naturally endowed with a sense of right and wrong and an innate plan for orderly, healthy growth. Unlike Locke, Rousseau believed that 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 the adult should be receptive to the child's needs at each of four stages: infancy, childhood, late childhood, and adolescence.

Rousseau's philosophy includes two influential concepts. The first is the concept of *stage*, which we discussed earlier. The second is the concept of **maturation**, which refers to a genetically determined, naturally unfolding course of growth. In contrast to Locke, Rousseau saw children as determining their own destinies. And he viewed development as a *discontinuous, stagewise* process that follows a *single, unified course* mapped out by *nature*.



## Scientific Beginnings

The study of child development evolved quickly in the late nineteenth and early twentieth centuries. Early observations of children 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** A century after Rousseau, British naturalist Charles Darwin (1809–1882) joined an expedition to distant parts of the world, where he observed 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 parts of the world because they have characteristics that fit with, or are adapted to, their surroundings. Other species die off because they are not as well-suited to their environments. Individuals within a species who best meet the environment's survival requirements live long enough to reproduce and pass on their more beneficial characteristics to future generations. Darwin's emphasis on the adaptive value of physical characteristics and behavior eventually found its way into important twentieth-century 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 (1844–1924), one of the most influential American psychologists of the early twentieth century, is generally regarded as the founder of the child-study movement (Cairns & Cairns, 2006). Inspired by Darwin's work, Hall and his well-known student Arnold Gesell (1880–1961) developed theories based on evolutionary ideas. These early leaders regarded development as a *maturational process*—a genetically determined series of events that unfold automatically, much like a flower (Gesell, 1933; Hall, 1904).

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

Gesell was also among the first to make knowledge about child development meaningful to parents by informing them of what to expect at each age. If, as he believed, the timetable of development is the product of millions of years of evolution, then children are naturally knowledgeable about their needs. His child-rearing advice, 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 by Paris school officials to find a way to identify children with learning problems who needed to be placed in special classes.

### LOOK and LISTEN

Examine several parenting-advice books in your local bookstore or library, and identify the stand each takes on the three basic issues about child development.



To address these practical educational concerns, Binet and Simon constructed the first successful intelligence test.

Binet began with a well-developed theory of intelligence. Capturing the complexity of children's thinking, he defined intelligence as good judgment, planning, and critical reflection (Sternberg & Jarvin, 2003). Then he created age-graded test items that directly measured these abilities.

In 1916, at Stanford University, Binet's test was adapted for use with English-speaking children. Since then, the English version has been known as the *Stanford-Binet Intelligence Scale*. Besides providing a score that could successfully predict school achievement, the Binet test sparked tremendous interest in individual differences in development. Comparisons of the scores of children who vary in gender, ethnicity, birth order, family background, and other characteristics became a major focus of research. And intelligence tests rose quickly to the forefront of the nature–nurture controversy.

**James Mark Baldwin: Early Developmental Theorist** A final important figure, long overlooked in the history of child development, is American psychologist James Mark Baldwin (1861–1934). A theorist and keen observer of children's behavior, Baldwin's (1897) rich interpretations of development are experiencing a revival today. He believed that children's understanding of their physical and social worlds develops through a sequence of stages, beginning with the simplest behavior patterns of the newborn infant and concluding with the adult's capacity to think abstractly and reflectively (Cairns & Cairns, 2006).

Yet in Baldwin's view, neither the child nor the environment controlled development. Instead, he granted nature and nurture equal importance. Children, he argued, actively revise their ways of thinking about the world, but they also learn through habit, or by copying others' behaviors. As development proceeds, the child and her social surroundings influence each other, forming an inseparable, interwoven network.

Consider these ideas, and you will see why Baldwin (1895) argued that heredity and environment should not be viewed as distinct, opposing forces. Instead, he claimed, most human characteristics are “due to both causes working together” (p. 77). As we turn now to an overview of modern theories of child development, you will find Baldwin's ideas represented in several, especially the more recent ones.

## A S K Y O U R S E L F

**Review** ■ Imagine a debate between John Locke and Jean-Jacques Rousseau on the nature–nurture controversy. Summarize the argument that each historical figure is likely to present.

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

**Reflect** ■ Find out whether your parents read any 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' generation? Explain.

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

## Mid-Twentieth-Century Theories

In the mid-twentieth century, the field of child development expanded into a legitimate discipline. Specialized research centers and professional societies devoted to the scientific study of children were founded. A leader among these is the Society for Research in Child Development (SRCD), established in 1933 to promote interdisciplinary research, dissemination of information, and applications of research findings. The society's inaugural membership of 425 grew rapidly. Today, approximately 5,500 researchers, applied professionals, and students from more than 50 countries are members.



As child development attracted increasing interest, a variety of theories emerged, each of which continues to have followers today. In these theories, the European concern with the child's inner thoughts and feelings contrasts sharply with the North American academic focus on scientific precision and concrete, observable behavior.

## The Psychoanalytic Perspective

By the 1930s and 1940s, parents were increasingly seeking professional help in dealing with children's emotional difficulties. The earlier normative movement had answered the question, What are children like? Now another question had to be addressed: How and why do children become the way they are? To treat psychological problems, psychiatrists and social workers turned to an emerging approach to personality development that emphasized the unique history of each child.

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

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

In Freud's theory, three parts of the personality—id, ego, and superego—become integrated during a sequence of five stages, summarized in Table 1.1 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 in acceptable ways. 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 id impulse to grab an attractive toy from a playmate confronts the superego's warning that such behavior is wrong, the ego must mediate between these two forces, deciding which will win the inner struggle or, alternatively, working out a compromise, such as asking for a turn with the toy. According to Freud, the relations established among id, ego, and superego during the preschool years determine the individual's basic personality.


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

Freud's theory was the first to stress the influence of the early parent–child relationship on development—an emphasis that continues to play a role in many contemporary theories. But his perspective was eventually criticized. First, it overemphasized the influence of sexual feelings in development. Second, because it was based on the problems of sexually repressed, well-to-do adults in nineteenth-century Victorian society, it did not apply in other cultures. Finally, Freud had not studied children directly.

**Erikson's Theory** Several of Freud's followers took what was useful from his theory and improved on his vision. The most important of these neo-Freudians is Erik Erikson (1902–1994), who expanded the picture of development at each stage. In his **psychosocial theory**, Erikson emphasized that in addition to mediating between id impulses and superego



**TABLE 1.1** Freud's Psychosexual Stages and Erikson's Psychosocial Stages Compared

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

demands, the ego makes a positive contribution to development, acquiring attitudes and skills that make the individual an active, contributing member of society. A basic psychosocial conflict, which is resolved along a continuum from positive to negative, determines healthy or maladaptive outcomes at each stage. As Table 1.1 shows, Erikson's first five stages parallel Freud's stages, but Erikson added three adult stages. He was one of the first to recognize the lifespan nature of development.

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 U.S. northwest coast 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. From our cultural vantage point, these practices may seem cruel. But Erikson explained that because the Yurok depended on salmon, which fill the river just once a year, the development of considerable self-restraint was essential for survival. In this way, he showed that child rearing is responsive to the competencies valued and needed by the child's society.



### Contributions and Limitations of the Psychoanalytic Perspective

A special strength of the psychoanalytic perspective is its emphasis on the individual's unique life history as worthy of study and understanding. Consistent with this view, psychoanalytic theorists accept the *clinical, or case study, method*, which synthesizes information from a variety of sources into a detailed picture of the personality of a single child. (We will discuss this method further in Chapter 2.) Psychoanalytic theory has also inspired a wealth of research on many aspects of emotional and social development, including infant–caregiver attachment, aggression, sibling relationships, child-rearing practices, morality, gender roles, and adolescent identity.

Despite its extensive contributions, the psychoanalytic perspective is no longer in the mainstream of child development research. Psychoanalytic theorists may have become isolated from the rest of the field because they were so strongly committed to in-depth study of individual children that they failed to consider other methods. In addition, many psychoanalytic ideas, such as psychosexual stages and ego functioning, are too vague to be tested empirically (Crain, 2005; Thomas, 2005). Nevertheless, Erikson's broad outline of psychosocial change captures the essence of psychosocial attainments at each age period. Consequently, we will return to it in later chapters.

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Children of the Lacandon Mayan people of southern Mexico learn from their father how to make arrows like those of their hunter-gatherer ancestors. As Erikson recognized, this parenting practice is best understood in relation to the competencies valued and needed in Lacandon culture.

## Behaviorism and Social Learning Theory

As the psychoanalytic perspective gained in prominence, child study 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), who wanted to create an objective science of psychology.

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

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

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



**Social Learning Theory** Psychologists wondered whether behaviorism might offer a more direct and effective explanation of the development of children's social behavior than the less precise concepts of psychoanalytic theory. This sparked 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 (1977), emphasized *modeling*, otherwise known as *imitation* or *observational learning*, as a powerful source of development. The baby who claps her hands after her mother does so, the child who angrily hits a playmate in the same way that he has been punished at home, and the teenager who wears the same clothes and hairstyle as her friends at school are all displaying

observational learning. In his early work, Bandura found that diverse factors influence children's motivation to imitate—their own history of reinforcement or punishment for the behavior, the promise of future reinforcement or punishment, and even vicarious reinforcement or punishment (observing the model being reinforced or punished).

Bandura's work continues to influence much research on children's social development. But today, like the field of child development as a whole, his theory stresses the importance of *cognition*, or thinking. Bandura has shown that children's ability to listen, remember, and abstract general rules from complex sets of observed behaviors affects their imitation and learning. In fact, the most recent revision of Bandura's (1992, 2001) theory places such strong emphasis on how children think about themselves and other people that he calls it a *social-cognitive* rather than a social learning approach.

In Bandura's revised view, children gradually become more selective in what they imitate. From watching others engage in self-praise and self-blame and through feedback about the worth of their own actions, children develop *personal standards* for behavior and a *sense of self-efficacy*—the belief that their own abilities and characteristics will help them succeed. These cognitions guide responses in particular situations (Bandura, 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 herself as hardworking and high-achieving and selects people with these characteristics as models. In this way, as children 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 had a major impact on practices with children. **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 wide range of serious developmental problems, such as persistent aggression, language delays, and extreme fears (Martin & Pear, 2007).

Behavior modification is also effective in dealing with common, everyday difficulties, including poor time management; unwanted habits such as nail biting and thumb sucking; and anxiety over such recurrent events as test-taking, public speaking, and medical and dental treatments. In one study, researchers reduced 4- and 5-year-olds' unruliness in a preschool classroom by reinforcing them with tokens (which they could exchange for treats)



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Social learning theory recognizes that children acquire many skills through modeling. By observing and imitating her mother's behavior, this 19-month-old learns an important skill.

### LOOK and LISTEN

Describe an event you observed in which feedback from a parent or teacher likely strengthened a child's self-efficacy. How might the adult's message have influenced the child's self-image and choice of models?



when they behaved appropriately and punishing them by taking away tokens when they screamed, threw objects, attacked other children, or refused to comply with a teacher's request (Conyers et al., 2004). In another investigation, children with acute burn injuries played a virtual reality game while nurses engaged in the painful process of changing their bandages. Visual images and sound effects delivered through a headset made the children feel as if they were in a fantasy world. As the game reinforced children's concentration and pleasure, it distracted them from the medical procedure, causing their pain and anxiety to drop sharply compared with dressing changes in which the game was unavailable (Das et al., 2005).

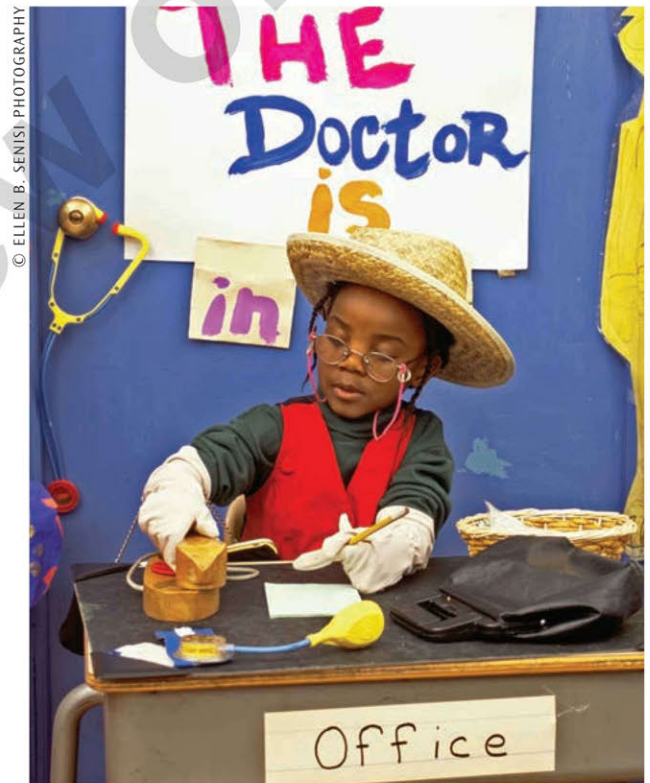
Nevertheless, many theorists believe that behaviorism and social learning theory offer too narrow a view of important environmental influences. These extend beyond immediate reinforcements, punishments, and modeled behaviors to children's rich physical and social worlds. Behaviorism and social learning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

## Piaget's Cognitive-Developmental Theory

If one individual has influenced the contemporary field of child development more than any other, it is Swiss cognitive theorist Jean Piaget (1896–1980). North American investigators had been aware of Piaget's work since 1930. But they did not grant it much attention until the 1960s, mainly because Piaget's ideas were at odds with behaviorism, which dominated North American psychology in the mid-twentieth century (Cairns & Cairns, 2006). 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 liquid changes when it is poured into a different-shaped container. According to Piaget, children eventually revise these incorrect ideas in their ongoing efforts to achieve an *equilibrium*, or balance, between internal structures and information they encounter in their everyday worlds.

In Piaget's theory, as the brain develops and children's experiences expand, they move through four broad stages, each characterized by qualitatively distinct ways of thinking. Table 1.2 on page 20 provides a brief description of Piaget's stages. Cognitive development begins in the *sensorimotor stage* with the baby's use of the senses and movements to explore the world. These action patterns evolve into the symbolic but illogical thinking of the preschooler in the *preoperational stage*. Then cognition is transformed into the more organized, logical reasoning of the



In Piaget's preoperational stage, preschool children represent their earlier sensorimotor discoveries with symbols, and language and make-believe play develop rapidly. With a few props, this 5-year-old creates an imaginary doctor's office.



**TABLE 1.2** Piaget's Stages of Cognitive Development

STAGE	PERIOD OF DEVELOPMENT	DESCRIPTION
Sensorimotor	Birth–2 years	Infants “think” by acting on the world with their eyes, ears, hands, and mouth. As a result, they invent ways of solving sensorimotor problems, such as pulling a lever to hear the sound of a music box, finding hidden toys, and putting objects into and taking them out of containers.
Preoperational	2–7 years	Preschool children use symbols to represent their earlier sensorimotor discoveries. Development of language and make-believe play takes place. However, thinking lacks the logic of the two remaining stages.
Concrete operational	7–11 years	Children’s reasoning becomes logical and better organized. School-age children understand that a certain amount of lemonade or play dough remains the same even after its appearance changes. They also organize objects into hierarchies of classes and subclasses. However, thinking falls short of adult intelligence. It is not yet abstract.
Formal operational	11 years on	The capacity for abstract, systematic thinking enables adolescents, when faced with a problem, to start with a hypothesis, deduce testable inferences, and isolate and combine variables to see which inferences are confirmed. Adolescents can also evaluate the logic of verbal statements without referring to real-world circumstances.



Jean Piaget

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In Piaget’s concrete operational stage, school-age children think in an organized, logical fashion about concrete objects. This 7-year-old understands that the quantity of pie dough remains the same after he changes its shape from a ball to a flattened circle.

school-age child in the *concrete operational stage*. Finally, in the *formal operational stage*, thought becomes the abstract, systematic reasoning system of the adolescent and adult.

Piaget devised special methods for investigating how children think. Early in his career, he carefully observed his three infant children and presented them with everyday problems, such as an attractive object that could be grasped, mouthed, kicked, or searched for. From their responses, Piaget derived his ideas about cognitive changes during the first two years. To study childhood and adolescent thought, Piaget adapted the clinical method of psychoanalysis, conducting open-ended *clinical interviews* in which a child’s initial response to a task served as the basis for Piaget’s next question. We will look more closely at this technique in Chapter 2.

**Contributions and Limitations of Piaget’s Theory** Piaget convinced the field that children are active learners whose minds consist of rich structures of knowledge. Besides investigating children’s understanding of the physical world, Piaget explored their reasoning about the social world. His stages have sparked a wealth of research on children’s conceptions of themselves, other people, and human relationships. In practical terms, Piaget’s theory encouraged the development of educational philosophies and programs that emphasize children’s 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. We will see in Chapter 6 that when young children are given tasks scaled down in difficulty and relevant to



their everyday experiences, their understanding appears closer to that of the older child and adult than Piaget assumed. Also, adolescents generally reach their full intellectual potential only in areas of endeavor in which they have had extensive education and experience (Kuhn, 2008). These discoveries have led many researchers to conclude that the maturity of thinking depends heavily on the complexity of knowledge sampled and the individual's familiarity with the task. Furthermore, many studies show that children's performance on Piagetian problems can be improved with training—findings that call into question Piaget's assumption that discovery learning rather than adult teaching is the best way to foster development (Klahr & Nigam, 2004; Siegler & Svetina, 2006). Critics also point out that Piaget's stagewise account pays insufficient attention to social and cultural influences—and the resulting wide variation in thinking among children and adolescents of the same age.

Today, the field of child development is divided over its loyalty to Piaget's ideas (Desrochers, 2008). Those who continue to find merit in Piaget's stages often accept a modified view—one in which changes in children's thinking take place more gradually than Piaget believed (Case, 1998; Demetriou et al., 2002; Fischer & Bidell, 2006; Halford & Andrews, 2006). Among those who disagree with Piaget's stage sequence, some have embraced an approach that emphasizes continuous gains in children's cognition: information processing. And still others have been drawn to theories that highlight the role of children's social and cultural contexts. We take up these approaches in the next section.

## A S K Y O U R S E L F

**Review** ■ What aspect of behaviorism made it attractive to critics of the psychoanalytic perspective? How did Piaget's theory respond to a major limitation of behaviorism?

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

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

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

## Recent Theoretical Perspectives

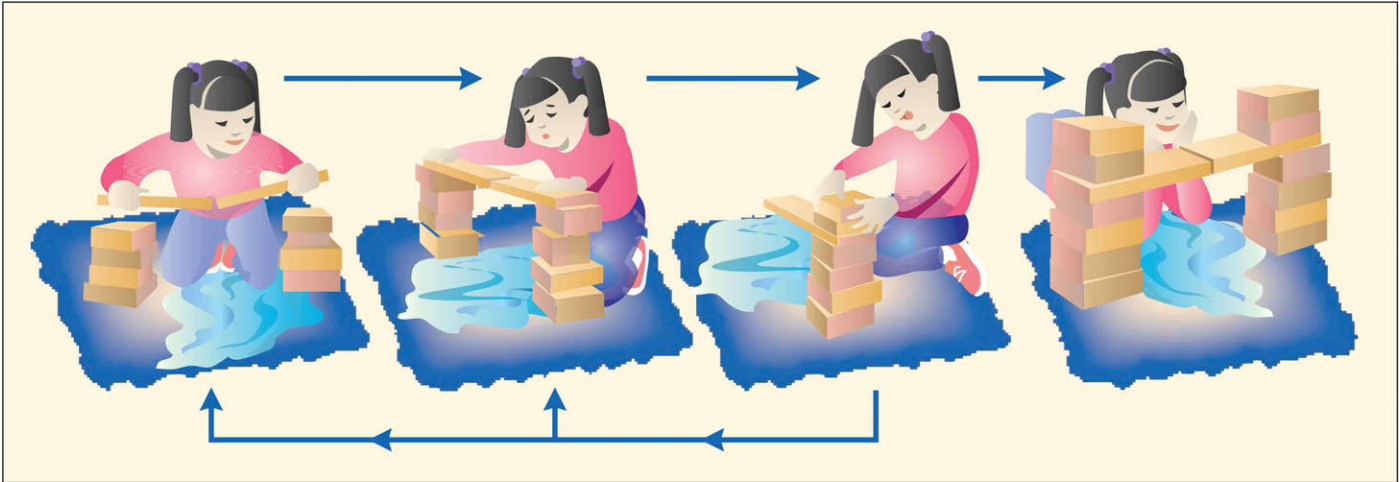
New ways of understanding children are constantly emerging—questioning, building on, and enhancing the discoveries of earlier theories. Today, a burst of fresh approaches and research emphases is broadening our understanding of children's development.

- ▶ Describe recent theoretical perspectives on child development.

### Information Processing

In the 1970s and 1980s, researchers turned to the field of cognitive psychology for ways to understand the development of children's 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; Munakata, 2006). From the time information is presented to the senses at *input* until it emerges as a behavioral response at *output*, the information is actively coded, transformed, and organized. Information-processing researchers often design flowcharts to map the precise steps individuals use to solve problems and complete tasks, much like the plans devised by programmers to get computers to perform a series of “mental operations.” They seek to clarify how





**FIGURE 1.3** 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.)

both task characteristics and cognitive limitations (for example, memory capacity or available knowledge) influence performance (Birney & Sternberg, 2011). To see the usefulness of this approach, let’s look at an example.

In a study of problem solving, a researcher provided a pile of blocks varying in size, shape, and weight and asked school-age children to build a bridge across a “river” (painted on a floor mat) that was too wide for any single block to span (Thornton, 1999). Figure 1.3 shows one solution: Two planklike blocks span the water, each held in place by the counterweight of heavy blocks on the bridge’s towers. Whereas older children easily built successful bridges, only one 5-year-old did. Careful tracking of her efforts revealed that she repeatedly tried unsuccessful strategies, such as pushing two planks together and pressing down on their ends to hold them in place. But eventually, her experimentation triggered the idea of using the blocks as counterweights. Her mistaken procedures helped her understand why the counterweight approach worked. Although this child had no prior understanding of counterweight and balance, she arrived at just as effective a solution as older children, who started with considerable task-relevant knowledge. Her own actions within the task facilitated problem solving.

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 (Johnson & Mareschal, 2001; Johnson-Laird, 2001; Westermann et al., 2006). These general models are used as guides for asking questions about broad age changes in children’s thinking: Does a child’s ability to solve problems become more organized and “planful” with age? What strategies do younger and older children use to remember new information, and how do those strategies affect children’s recall?

The information-processing approach is also being used to clarify the processing of social information. For example, flowcharts exist that track the steps children use to solve social problems (such as how to enter an ongoing play group) and acquire gender-linked preferences and behaviors (Crick & Dodge, 1994; Liben & Bigler, 2002). If we can identify how social problem solving and gender stereotyping arise in childhood, then we can design interventions that promote more favorable social development.

Like Piaget’s theory, the information-processing approach regards children as active, sense-making beings who modify their own thinking in response to environmental demands (Halford, 2005; Munakata, 2006). But unlike Piaget’s theory, it does not divide development into stages. Rather, the thought processes studied—perception, attention, memory, categorization of information, planning, problem solving, and comprehension of written and spoken prose—usually 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 of different ages engage in many aspects of thinking, its findings have led to teaching methods that help