1 The Life-Span Perspective

Learning Goal 1 Discuss the distinctive features of a life-span perspective on development.

The Importance of Studying Life-Span Development
Characteristics of the Life-Span Perspective
Some Contemporary Concerns

2 The Nature of Development

Learning Goal 2 Identify the most important processes, periods, and issues in development.

Biological, Cognitive, and Socioemotional Processes
Periods of Development
The Significance of Age
Developmental Issues

3 Theories of Development

Learning Goal 3 Describe the main theories of human development.

Psychoanalytic Theories
Cognitive Theories
Behavioral and Social Cognitive Theories
Ethological Theory
Ecological Theory
An Eclectic Theoretical Orientation

4 Research in Life-Span Development

Learning Goal 4 Explain how research on life-span development is conducted.

Methods for Collecting Data
Research Designs
Time Span of Research
Conducting Ethical Research
Minimizing Bias
Ted Kaczynski sprinted through high school, not bothering with his junior year and making only passing efforts at social contact. Off to Harvard at age 16, Kaczynski was a loner during his college years. One of his roommates at Harvard said that he avoided people by quickly shuffling by them and slamming the door behind him. After obtaining his Ph.D. in mathematics at the University of Michigan, Kaczynski became a professor at the University of California at Berkeley. His colleagues there remember him as hiding from social circumstances—no friends, no allies, no networking.

After several years at Berkeley, Kaczynski resigned and moved to a rural area of Montana where he lived as a hermit in a crude shack for 25 years. Town residents described him as a bearded eccentric. Kaczynski traced his own difficulties to growing up as a genius in a kid’s body and sticking out like a sore thumb in his surroundings as a child. In 1996, he was arrested and charged as the notorious Unabomber, America’s most wanted killer. Over the course of 17 years, Kaczynski had sent 16 mail bombs that left 23 people wounded or maimed, and 3 people dead. In 1998, he pleaded guilty to the offenses and was sentenced to life in prison.

A decade before Kaczynski mailed his first bomb, Alice Walker spent her days battling racism in Mississippi. She had recently won her first writing fellowship, but rather than use the money to follow her dream of moving to Senegal, Africa, she put herself into the heart and heat of the civil rights movement. Walker had grown up knowing the brutal effects of poverty and racism. Born in 1944, she was the eighth child of Georgia sharecroppers who earned $300 a year. When Walker was 8, her brother accidentally shot her in the left eye with a BB gun. By the time her parents got her to the hospital a week later (they had no car), she was blind in that eye, and it had developed a disfiguring layer of scar tissue. Despite the counts against her, Walker overcame pain and anger and went on to win a Pulitzer Prize for her book *The Color Purple*. She became not only a novelist, but also an essayist, a poet, a short-story writer, and a social activist.
We reach backward to our parents and forward to our children, and through their children to a future we will never see, but about which we need to care.

—CARL JUNG
Swiss Psychiatrist, 20th Century

Each of us develops partly like all other individuals, partly like some other individuals, and partly like no other individuals. Most of the time our attention is directed to an individual's uniqueness. But as humans, we have all traveled some common paths. Each of us—Leonardo da Vinci, Joan of Arc, George Washington, Martin Luther King, Jr., and you—walked at about 1 year, engaged in fantasy play as a young child, and became more independent as a youth. Each of us, if we live long enough, will experience hearing problems and the death of family members and friends. This is the general course of our development, the pattern of movement or change that begins at conception and continues through the human life span.

In this section, we will explore what is meant by the concept of development and why the study of life-span development is important. We will outline the main characteristics of the life-span perspective and discuss various sources of contextual influences. In addition, we will examine some contemporary concerns in life-span development.

THE IMPORTANCE OF STUDYING LIFE-SPAN DEVELOPMENT

How might people benefit from examining life-span development? Perhaps you are, or will be, a parent or teacher. If so, responsibility for children is, or will be, a part of your everyday life. The more you learn about them, the better you can deal with them. Perhaps you hope to gain some insight about your own history—as an infant, a child, an adolescent, or a young adult. Perhaps you want to know more about what your life will be like as you grow through the development of change that begins at conception and continues through the life span. Most development involves growth, although it also includes decline brought on by aging and dying.

life-span perspective The perspective that development is lifelong, multidimensional, multidirectional, plastic, multidisciplinary, and contextual; involves growth, maintenance, and regulation; and is constructed through biological, sociocultural, and individual factors working together.
adult years—as a middle-aged adult, or as an adult in old age, for example. Or perhaps you just stumbled onto this course, thinking that it sounded intriguing and that the study of the human life span might raise some provocative issues. Whatever your reasons, you will discover that the study of life-span development is intriguing and filled with information about who we are, how we came to be this way, and where our future will take us.

Most development involves growth, but it also includes decline (as in dying). In exploring development, we will examine the life span from the point of conception until the time when life (at least, life as we know it) ends. You will see yourself as an infant, as a child, and as an adolescent, and be stimulated to think about how those years influenced the kind of individual you are today. And you will see yourself as a young adult, as a middle-aged adult, and as an adult in old age, and be motivated to think about how your experiences today will influence your development through the remainder of your adult years.

**CHARACTERISTICS OF THE LIFE-SPAN PERSPECTIVE**

Although growth and development are dramatic during the first two decades of life, development is not something that happens only to children and adolescents. The traditional approach to the study of development emphasizes extensive change from birth to adolescence (especially during infancy), little or no change in adulthood, and decline in old age. But a great deal of change does occur in the five or six decades after adolescence. The life-span approach emphasizes developmental change throughout adulthood as well as childhood (Park & Huang, 2010; Scheibe & Carstensen, 2010).

Recent increases in human life expectancy contributed to the popularity of the life-span approach to development. The upper boundary of the human life span (based on the oldest age documented) is 122 years, as indicated in Figure 1.1; this maximum life span of humans has not changed since the beginning of recorded history. What has changed is life expectancy: the average number of years that a person born in a particular year can expect to live. In the 20th century alone, life expectancy in the United States increased by 30 years, thanks to improvements in sanitation, nutrition, and medicine (see Figure 1.2). As we move toward the end of the first decade of the 21st century, the life expectancy in the United States is 78 years of age (U.S. Census Bureau, 2008). Today, for most individuals in developed countries, childhood and adolescence represent only about one-fourth of their lives.

The belief that development occurs throughout life is central to the life-span perspective on human development, but this perspective has other characteristics as well. According to life-span development expert Paul Baltes (1939–2006), the *life-span perspective* views development as lifelong, multidimensional, multidirectional, plastic, multidisciplinary, and contextual, and as a process that involves growth, maintenance, and regulation of loss (Baltes, 1987, 2003; Baltes, Lindenberger, & Staudinger, 2006). In Baltes’ view, it is important to understand that development is constructed through biological, sociocultural, and individual factors working together. Let’s look at each of these characteristics.

**Development Is Lifelong** In the life-span perspective, early adulthood is not the endpoint of development; rather, no age period dominates development. Researchers increasingly study the experiences and psychological orientations of adults at different points in their lives. Later in this chapter, we will describe the age periods of development and their characteristics.
**Development Is Multidimensional** Whatever your age, your body, your mind, your emotions, and your relationships are changing and affecting each other. Consider the development of Ted Kaczynski, the Unabomber discussed at the opening of the chapter. When he was 6 months old, he was hospitalized with a severe allergic reaction and his parents were rarely allowed to visit the baby. According to his mother, the previously happy baby was never the same. The infant became withdrawn and unresponsive. As Ted grew up, he had periodic “shutdowns” accompanied by rage. In his mother’s view, a biological event in infancy warped the development of her son’s mind and emotions.

Development consists of biological, cognitive, and socioemotional dimensions. Even within a dimension, there are many components—for example, attention, memory, abstract thinking, speed of processing information, and social intelligence are just a few of the components of the cognitive dimension.

**Development Is Multidirectional** Throughout life, some dimensions or components of a dimension expand and others shrink. For example, when one language (such as English) is acquired early in development, the capacity for acquiring second and third languages (such as Spanish and Chinese) decreases later in development, especially after early childhood (Levelt, 1989). During adolescence, as individuals establish romantic relationships, their time spent with friends may decrease. During late adulthood, older adults might become wiser by being able to call on experience to guide their intellectual decision making, but they perform more poorly on tasks that require speed in processing information (Hoyer & Roodin, 2009; Staudinger & Gluck, 2011).

**Development Is Plastic** Even at 10 years old, Ted Kaczynski was extraordinarily shy. Was he destined to remain forever uncomfortable with people? Developmentalists debate how much plasticity people have in various dimensions at different points in their development. **Plasticity means the capacity for change**. For example, can you still improve your intellectual skills when you are in your seventies or eighties? Or might these intellectual skills be fixed by the time you are in your thirties so that further improvement is impossible? Researchers have found that the cognitive skills of older adults can be improved through training and developing better strategies (Boron, Willis, & Schaie, 2007; Hillman, Erickson, & Kramer, 2008). However, possibly we possess less capacity for change when we become old (Baltes, Reuter-Lorenz, & Rösler, 2006). The search for plasticity and its constraints is a key element on the contemporary agenda for developmental research (Park & Huang, 2010; Siegler & others, 2009).

**Developmental Science Is Multidisciplinary** Psychologists, sociologists, anthropologists, neuroscientists, and medical researchers all share an interest in unlocking the mysteries of development through the life span. How do your heredity and health limit your intelligence? Do intelligence and social relationships change with age in the same way around the world? How do families and schools influence intellectual development? These are examples of research questions that cut across disciplines.

**Development Is Contextual** All development occurs within a context, or setting. Contexts include families, schools, peer groups, churches, cities, neighborhoods, university laboratories, countries, and so on. Each of these settings is influenced by historical, economic, social, and cultural factors (Goodnow, 2010; Suarez-Orosco & Suarez-Orosco, 2010).

Contexts, like individuals, change. Thus, individuals are changing beings in a changing world. As a result of these changes, contexts exert three types of influences (Baltes, 2003): (1) normative age-graded influences, (2) normative history-graded influences, and (3) nonnormative or highly individualized life events. Each

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**FIGURE 1.2** HUMAN LIFE EXPECTANCY AT BIRTH FROM PREHISTORIC TO CONTEMPORARY TIMES. It took 5,000 years to extend human life expectancy from 18 to 41 years of age.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Average Life Expectancy (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prehistoric times</td>
<td>18</td>
</tr>
<tr>
<td>Ancient Greece</td>
<td>20</td>
</tr>
<tr>
<td>1915, USA</td>
<td>54</td>
</tr>
<tr>
<td>1900, USA</td>
<td>47</td>
</tr>
<tr>
<td>19th century, England</td>
<td>41</td>
</tr>
<tr>
<td>1620, Massachusetts Bay Colony</td>
<td>35</td>
</tr>
<tr>
<td>Middle Ages, England</td>
<td>33</td>
</tr>
<tr>
<td>1954, USA</td>
<td>70</td>
</tr>
<tr>
<td>2009, USA</td>
<td>78</td>
</tr>
</tbody>
</table>

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**developmental connection**

**Exercise.** What effect might exercise have on older adult’s ability to process information? Chapter 17, p. 552
of these types can have a biological or environmental impact on development. **Normative age-graded influences** are similar for individuals in a particular age group. These influences include biological processes such as puberty and menopause. They also include sociocultural, environmental processes such as beginning formal education (usually at about age 6 in most cultures) and retirement (which takes place in the fifties and sixties in most cultures).

**Normative history-graded influences** are common to people of a particular generation because of historical circumstances. For example, in their youth American baby boomers shared the experience of the Cuban missile crisis, the assassination of John F. Kennedy, and the Beatles invasion. Other examples of normative history-graded influences include economic, political, and social upheavals such as the Great Depression in the 1930s, World War II in the 1940s, the civil rights and women's rights movements of the 1960s and 1970s, the terrorist attacks of 9/11/2001, as well as the integration of computers and cell phones into everyday life during the 1990s (Schaie, 2009, 2010a, b). Long-term changes in the genetic and cultural makeup of a population (due to immigration or changes in fertility rates) are also part of normative historical change.

**Nonnormative life events** are unusual occurrences that have a major impact on the individual's life. These events do not happen to all people, and when they do occur they can influence people in different ways. Examples include the death of a parent when a child is young, pregnancy in early adolescence, a fire that destroys a home, winning the lottery, or getting an unexpected career opportunity.

### Development Involves Growth, Maintenance, and Regulation of Loss
Baltes and his colleagues (2006) assert that the mastery of life often involves conflicts and competition among three goals of human development: growth, maintenance, and regulation of loss. As individuals age into middle and late adulthood, the maintenance and regulation of loss in their capacities takes center stage away from growth. Thus, a 75-year-old man might aim not to improve his memory or his golf swing but to maintain his independence and his ability to play golf at all. In Chapters 15 and 16, we will discuss these ideas about maintenance and regulation of loss in greater depth.

### Development Is a Co-Construction of Biology, Culture, and the Individual
Development is a co-construction of biological, cultural, and individual factors working together (Baltes, Reuter-Lorenz, & Rösler, 2006). For example, the brain shapes culture, but it is also shaped by culture and the experiences that individuals have or pursue. In terms of individual factors, we can go beyond what our genetic inheritance and environment give us. We can author a unique developmental path by actively choosing from the environment the things that optimize our lives (Rathunde & Csikszentmihalyi, 2006).

### SOME CONTEMPORARY CONCERNS
Pick up a newspaper or magazine and you might see headlines like these: “Political Leanings May Be Written in the Genes,” “Mother Accused of Tossing Children into Bay,” “Gender Gap Widens,” “FDA Warns About ADHD Drug,” “Heart Attack Deaths Higher in Black Patients,” “Test May Predict Alzheimer’s Disease.” Researchers using the life-span perspective are examining these and many other topics of contemporary concern. The roles that health and well-being, parenting, education, and sociocultural contexts play in life-span development, as well as how social policy is related to these issues, are a particular focus of this textbook.

**Health and Well-Being** Health professionals today recognize the power of lifestyles and psychological states in health and well-being (Hahn, Payne, & Lucas,
CHAPTER 1 Introduction

In every chapter of this book, issues of health and well-being are integrated into our discussion. Clinical psychologists are among the health professionals who help people improve their well-being. Read about one clinical psychologist who helps adolescents who have become juvenile delinquents or substance abusers in Connecting With Careers.

Parenting and Education Can two gay men raise a healthy family? Are children harmed if both parents work outside the home? Are U.S. schools failing to teach children how to read and write and calculate adequately? We hear many questions like these related to pressures on the contemporary family and the problems of U.S. schools (Johnson & others, 2011; McCombs, 2010). In later chapters, we will analyze child care, the effects of divorce, parenting styles, child maltreatment, intergenerational relationships, early childhood education, relationships between childhood poverty and education, bilingual education, new educational efforts to improve lifelong learning, and many other issues related to parenting and education (Bredekamp, 2011).

Sociocultural Contexts and Diversity Health, parenting, and education—like development itself—are all shaped by their sociocultural context. To analyze this context, four concepts are especially useful: culture, ethnicity, socioeconomic status, and gender.

Culture encompasses the behavior patterns, beliefs, and all other products of a group that are passed on from generation to generation (Cole, 2011; Sparling & Redican, 2011). In every chapter of this book, issues of health and well-being are integrated into our discussion.

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Culture encompasses the behavior patterns, beliefs, and all other products of a group that are passed on from generation to generation. A cultural group can be as large as the United States or as small as an isolated Appalachian town. Whatever its size, the group’s culture influences the behavior of its members (Cole.
Cross-cultural studies compare aspects of two or more cultures. The comparison provides information about the degree to which development is similar, or universal, across cultures, or is instead culture-specific (Goodnow, 2010; Kitayama, 2011).

Ethnicity (the word ethnic comes from the Greek word for “nation”) is rooted in cultural heritage, nationality, race, religion, and language. African Americans, Latinos, Asian Americans, Native Americans, European Americans, and Arab Americans are a few examples of broad ethnic groups in the United States. Diversity exists within each ethnic group (Banks, 2010; Nieto, 2010).

Socioeconomic status (SES) refers to a person’s position within society based on occupational, educational, and economic characteristics. Socioeconomic status implies certain inequalities. Differences in the ability to control resources and to participate in society’s rewards produce unequal opportunities (Huston & Bentley, 2010).

Gender refers to the characteristics of people as males and females. Few aspects of our development are more central to our identity and social relationships than gender (Best, 2010; Martin & Ruble, 2010).

In the United States, the sociocultural context has become increasingly diverse in recent years. Its population includes a greater variety of cultures and ethnic groups than ever before. This changing demographic tapestry promises not only the richness that diversity produces but also difficult challenges in extending the American dream to all individuals (Bornstein & Cote, 2010; McLoyd & others, 2009). We will discuss sociocultural contexts and diversity in each chapter.

A special cross-cultural concern is the educational and psychological conditions of women around the world (UNICEF, 2010). Inadequate educational opportunities, violence, and mental health issues are just some of the problems faced by many women.

One analysis found that a higher percentage of girls than boys around the world have never had any education (UNICEF, 2004) (see Figure 1.3). The countries with the fewest females being educated are in Africa, where in some areas, girls and women are receiving no education at all. Canada, the United States, and Russia have

**FIGURE 1.3**
Percentage of Children 7 to 18 Years of Age Around the World Who Have Never Been to School of Any Kind. When UNICEF (2004) surveyed the education that children around the world are receiving, it found that far more girls than boys receive no formal schooling at all.
In developing countries, 67 percent of women over the age of 25 (compared with 50 percent of men) have never been to school. At the beginning of the 21st century, 80 million more boys than girls were in primary and secondary educational settings around the world (United Nations, 2002).

**Social Policy**  
Social policy is a government’s course of action designed to promote the welfare of its citizens. Values, economics, and politics all shape a nation’s social policy. Out of concern that policymakers are doing too little to protect the well-being of children and older adults, lifespan researchers are increasingly undertaking studies that they hope will lead to effective social policy (Balsano, Theokas, & Bobek, 2009).

Statistics such as infant mortality rates, mortality among children under 5, and the percentage of children who are malnourished or living in poverty provide benchmarks for evaluating how well children are doing in a particular society (UNICEF, 2010). Marian Wright Edelman, a tireless advocate of children’s rights, has pointed out that indicators like these place the United States at or near the lowest rank for industrialized nations in the treatment of children.

Children who grow up in poverty represent a special concern (McLoyd & others, 2009; Tamis-LeMonda & McFadden, 2010). In 2006, approximately 17.4 percent of U.S. children were living in families below the poverty line (Federal Interagency Forum on Child and Family Statistics, 2008). This is an increase from 2001 (16.2 percent) but down from a peak of 22.7 percent in 1993. As indicated in Figure 1.4, one study found that a higher percentage of U.S. children in poor families than in middle-income families were exposed to family turmoil, separation from a parent, violence, crowding, excessive noise, and poor housing (Evans & English, 2002). A recent study also revealed that the more
Improving Family Policy

In the United States, the national government, state governments, and city governments all play a role in influencing the well-being of children (Children's Defense Fund, 2009). When families fail or seriously endanger a child’s well-being, governments often step in to help. At the national and state levels, policy makers have debated for decades whether helping poor parents ends up helping their children as well. Researchers are providing some answers by examining the effects of specific policies (McLoyd & others, 2009).

For example, the Minnesota Family Investment Program (MFIP) was designed in the 1990s primarily to influence the behavior of adults—specifically, to move adults off the welfare rolls and into paid employment. A key element of the program was that it guaranteed that adults participating in the program would receive more income if they worked than if they did not. When the adults’ income rose, how did that affect their children? A study of the effects of MFIP found that increases in the incomes of working poor parents were linked with benefits for their children (Gennetian & Miller, 2002). The children’s achievement in school improved, and their behavior problems decreased. A current MFIP study is examining the influence of specific services on low-income families at risk for child maltreatment and other negative outcomes for children (Minnesota Family Investment Program, 2009).

Developmental psychologists and other researchers have examined the effects of many other government policies. They are seeking ways to help families living in poverty improve their well-being, and they have offered many suggestions for improving government policies (McLoyd & others, 2009).

Earlier, we learned that children who live in poverty experience higher levels of physiological stress. How might a child’s stress level be affected by the implementation of MFIP?

The U.S. figure of 17.4 percent of children living in poverty is much higher than those from other industrialized nations. For example, Canada has a child poverty rate of 9 percent and Sweden has a rate of 2 percent.

Edelman says that parenting and nurturing the next generation of children is our society’s most important function and that we need to take it more seriously than we have in the past. To read about efforts to improve the lives of children through social policies, see Connecting Development to Life above.

Some children triumph over poverty or other adversities. They show resilience (Gutman, 2008). Think back to the chapter-opening story about Alice Walker. In spite of racism, poverty, her low socioeconomic status, and a disfiguring eye injury, she went on to become a successful author and champion for equality.

Are there certain characteristics that make children like Alice Walker resilient? Are there other characteristics that make children like Ted Kaczynski, who despite his intelligence and education, became a killer? After analyzing research on this topic, Ann Masten and her colleagues (2004, 2006, 2007, 2009a, b; Masten, Burt, & Coatsworth, 2006; Masten & others, 2009a, b) concluded that a number of individual factors, such as good intellectual functioning, influence resilience. In addition, as Figure 1.5 shows, their families and extrafamilial contexts tend to show certain features. For example, resilient children are likely to have a close relationship to a caring parent figure and bonds to caring adults outside the family.

### Figure 1.5
** Characteristics of Resilient Children and Their Contexts **

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<thead>
<tr>
<th>Source</th>
<th>Characteristic</th>
</tr>
</thead>
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<td>Individual</td>
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<td>Close relationship to caring parent figure, Authoritative parenting: warmth, structure, high expectations, Socioeconomic advantages, Connections to extended supportive family networks</td>
</tr>
<tr>
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<td>Bonds to caring adults outside the family, Connections to positive organizations, Attending effective schools</td>
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years children spent living in poverty, the more their physiological indices of stress were elevated (Evans & Kim, 2007).

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At the other end of the life span, the well-being of older adults also creates policy issues (Moody, 2009). Key concerns are escalating health care costs and the access of older adults to adequate health care (Ferrini & Ferrini, 2008). One study found that the health care system fails older adults in many areas (Wenger & others, 2003). For example, older adults received the recommended care for general medical conditions such as heart disease only 52 percent of the time; they received appropriate care for undernutrition and Alzheimer’s disease only 31 percent of the time.

These concerns about the well-being of older adults are heightened by two facts. First, the number of older adults in the United States is growing dramatically, as Figure 1.6 shows. Second, many of these older Americans are likely to need society’s help. Compared with earlier decades, U.S. adults today are less likely to be married, more likely to be childless, and more likely to be living alone. As the older population continues to expand in the 21st century, an increasing number of older adults will be without either a spouse or children—traditionally the main sources of support for older adults (Connidis, 2009). These individuals will need social relationships, networks, and supports (Knight & Sayegh, 2010).

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In this section, we will explore what is meant by developmental processes and periods, as well as variations in the way age is conceptualized. We will examine key developmental issues and strategies we can use to evaluate them.

If you wanted to describe how and why Alice Walker or Ted Kaczynski developed during their lifetimes, how would you go about it? A chronicle of the events in any person’s life can quickly become a confusing and tedious array of details. Two concepts help provide a framework for describing and understanding an individual’s development: developmental processes and periods.

**BIOLICAL, COGNITIVE, AND SOCIOEMOTIONAL PROCESSES**

At the beginning of this chapter, we defined development as the pattern of change that begins at conception and continues through the life span. The pattern is complex because it is the product of biological, cognitive, and socioemotional processes (see Figure 1.7).

**Biological Processes**  Biological processes produce changes in an individual’s physical nature. Genes inherited from parents, the development of the brain, height and weight gains, changes in motor skills, nutrition, exercise, the hormonal changes of puberty, and cardiovascular decline are all examples of biological processes that affect development.

**Cognitive Processes**  Cognitive processes refer to changes in the individual’s thought, intelligence, and language. Watching a colorful mobile swinging above the crib, putting together a two-word sentence, memorizing a poem, imagining what it would be like to be a movie star, and solving a crossword puzzle all involve cognitive processes.

**Socioemotional Processes**  Socioemotional processes involve changes in the individual’s relationships with other people, changes in emotions, and changes in personality. An infant’s smile in response to a parent’s touch, a toddler’s aggressive attack on a playmate, a school-age child’s development of assertiveness, an adolescent’s joy at the senior prom, and the affection of an elderly couple all reflect the role of socioemotional processes in development.

**Connecting Biological, Cognitive, and Socioemotional Processes**  Biological, cognitive, and socioemotional processes are inextricably intertwined (Diamond, 2009). Consider a baby smiling in response to a parent’s touch. This response depends on biological processes (the physical nature of touch and responsiveness to it), cognitive processes (the ability to understand intentional acts), and socioemotional processes (the act of smiling that often reflects a positive emotional feeling and helps to connect us in positive ways with other human beings). Nowhere is the connection across biological, cognitive, and socioemotional processes more obvious than in two rapidly emerging fields:

- *developmental cognitive neuroscience*, which explores links between development, cognitive processes, and the brain (Diamond, Casey, & Munakata, 2011).
• developmental social neuroscience, which examines connections between socioemotional processes, development, and the brain (Calkins & Bell, 2010; de Haan & Gunnar, 2009).

In many instances, biological, cognitive, and socioemotional processes are bidirectional. For example, biological processes can influence cognitive processes and vice versa. Thus, although usually we will study the different processes of development (biological, cognitive, and socioemotional) in separate locations, keep in mind that we are talking about the development of an integrated individual with a mind and body that are interdependent. In many places throughout the book, we will call attention to these connections.

PERIODS OF DEVELOPMENT

The interplay of biological, cognitive, and socioemotional processes produces the periods of the human life span (see Figure 1.8). A developmental period refers to a timeframe in a person’s life that is characterized by certain features. For the purposes of organization and understanding, we commonly describe development in terms of these periods. The most widely used classification of developmental periods involves the eight-period sequence shown in Figure 1.8. Approximate age ranges are listed for the periods to provide a general idea of when a period begins and ends.

The prenatal period is the time from conception to birth. It involves tremendous growth—from a single cell to an organism complete with brain and behavioral capabilities—and takes place in approximately a nine-month period.

Infancy is the developmental period from birth to 18 or 24 months. Infancy is a time of extreme dependence upon adults. During this period, many psychological activities—language, symbolic thought, sensorimotor coordination, and social learning, for example—are just beginning.
Early childhood is the developmental period from the end of infancy to age 5 or 6. This period is sometimes called the “preschool years.” During this time, young children learn to become more self-sufficient and to care for themselves, develop school readiness skills (following instructions, identifying letters), and spend many hours in play with peers. First grade typically marks the end of early childhood.

Middle and late childhood is the developmental period from about 6 to 11 years of age, approximately corresponding to the elementary school years. During this period, the fundamental skills of reading, writing, and arithmetic are mastered. The child is formally exposed to the larger world and its culture. Achievement becomes a more central theme of the child’s world, and self-control increases.

Adolescence is the developmental period of transition from childhood to early adulthood, entered at approximately 10 to 12 years of age and ending at 18 to 21 years of age. Adolescence begins with rapid physical changes—dramatic gains in height and weight, changes in body contour, and the development of sexual characteristics such as enlargement of the breasts, growth of pubic and facial hair, and deepening of the voice. At this point in development, the pursuit of independence and an identity are prominent. Thought is more logical, abstract, and idealistic. More time is spent outside the family.

Early adulthood is the developmental period that begins in the early 20s and lasts through the 30s. It is a time of establishing personal and economic independence, career development, and for many, selecting a mate, learning to live with someone in an intimate way, starting a family, and rearing children.

Middle adulthood is the developmental period from approximately 40 years of age to about 60. It is a time of expanding personal and social involvement and responsibility; of assisting the next generation in becoming competent, mature individuals; and of reaching and maintaining satisfaction in a career.

Late adulthood is the developmental period that begins in the 60s or 70s and lasts until death. It is a time of life review, retirement, and adjustment to new social roles involving decreasing strength and health.

Late adulthood has the longest span of any period of development, and as noted earlier, the number of people in this age group has been increasing dramatically. As a result, life-span developmentalists have been paying more attention to differences within late adulthood (Scheibe, Freund, & Baltes, 2007). Paul Baltes and Jacqui Smith (2003) argue that a major change takes place in older adults’ lives as they become the “oldest-old,” on average at about 85 years of age. For example, the “young-old” (classified as 65 through 84 in this analysis) have substantial potential for physical and cognitive fitness, retain much of their cognitive capacity, and can develop strategies to cope with the gains and losses of aging. In contrast, the oldest-old (85 and older) show considerable loss in cognitive skills, experience an increase in chronic stress, and are more frail (Baltes & Smith, 2003).

Thus, Baltes and Smith concluded that considerable plasticity and adaptability characterize adults from their 60s until their mid-80s but that the oldest-old have reached the limits of their functional capacity, which makes interventions to improve their lives difficult. Nonetheless, as will be described in later chapters, considerable variation exists in how much the oldest-old retain their capabilities (Perls, 2007).

Four Ages Life-span developmentalists who focus on adult development and aging increasingly describe life-span development in terms of four “ages” (Baltes, 2006; Willis & Schaie, 2006):

- **First age**: Childhood and adolescence
- **Second age**: Prime adulthood, 20s through 50s
- **Third age**: Approximately 60 to 79 years of age
- **Fourth age**: Approximately 80 years and older
The major emphasis in this conceptualization is on the third and fourth ages, especially the increasing evidence that individuals in the third age are healthier and can lead more active, productive lives than their predecessors in earlier generations. However, when older adults reach their 80s, especially 85 and over (fourth age), health and well-being decline for many individuals.

Connections Across Periods of Development A final important point needs to be made about the periods of the human life span. Just as there are many connections between biological, cognitive, and socioemotional processes, so are there many connections between the periods of the human life span. A key aspect in the study of life-span development is how development in one period is connected to development in another period. For example, when individuals reach adolescence, think of all the many developments and experiences that have already taken place in their lives. For example, if an adolescent girl becomes depressed, might her depression be linked to development early in her life, as well as recent and current development? Throughout the text we will call attention to such connections across periods of development through Developmental Connections inserts that guide you to earlier or later connections of the material you are currently reading.

THE SIGNIFICANCE OF AGE

In our description of developmental periods, we linked an approximate age range with each period. But we also have noted that there are variations in the capabilities of individuals of the same age, and we have seen how changes with age can be exaggerated. How important is age when we try to understand an individual?

Age and Happiness Is one age in life better than another? When researchers have studied this question, consistent answers have not been forthcoming. Some studies of adults have indicated that happiness increases with age (Rodgers, 1982), others reveal no differences in happiness for adults of different ages (Inglehart, 1990), and yet others have found a U-shaped result with the lowest happiness occurring at 30 to 40 years of age (Mroczek & Kolarz, 1998). However, an increasing number of studies indicate that at least in the United States adults are happier as they age (Charles, Reynolds, & Gatz, 2001; Ehrlich & Isaacowitz, 2002). Consider a recent large-scale U.S. study of approximately 28,000 individuals from 18 to 88 that revealed happiness increased with age (Yang, 2008). For example, about 33 percent were very happy at 88 years of age compared with only about 24 percent in their late teens and early twenties. Why might older people report as much or more happiness and life satisfaction as younger people? Despite the increase in physical problems and losses older adults experience, they are more content with what they have in their lives, have better relationships with the people who matter to them, are less pressured to achieve, have more time for leisurely pursuits, and have many years of experience that may help them adapt to their circumstances with wisdom than younger adults do (Cornwell, Schumm, & Laumann, 2008; Ram & others, 2008). Also in the study, baby boomers (those born from 1946 to 1964) reported being less happy than individuals born earlier, possibly because they are not lowering their aspirations and idealistic hopes as they age as earlier generations did. Because growing older is a certain outcome of living, it is good to know that we are likely to be just as happy or happier as older adults as when we were younger.

Conceptions of Age According to some life-span experts, chronological age is not very relevant to understanding a person’s psychological development (Botwinick, 1978). Chronological age is the number of years that have elapsed since birth. But time is a crude index of experience, and it does not cause anything. Chronological age, moreover, is not the only way of measuring age. Just as there are different domains of development, there are different ways of thinking about age.
Age has been conceptualized not just as chronological age but also as biological age, psychological age, and social age (Hoyer & Roodin, 2009). Biological age is a person’s age in terms of biological health. Determining biological age involves knowing the functional capacities of a person’s vital organs (Westendorp & Kirkwood, 2007). One person’s vital capacities may be better or worse than those of others of comparable age. The younger the person’s biological age, the longer the person is expected to live, regardless of chronological age.

Psychological age is an individual’s adaptive capacities compared with those of other individuals of the same chronological age. Thus, older adults who continue to learn, are flexible, are motivated, have positive personality traits, control their emotions, and think clearly are engaging in more adaptive behaviors than their chronological age-mates who do not continue to learn, are rigid, are unmotivated, do not control their emotions, and do not think clearly (Depp, Vahia, & Jeste, 2010; Park & Huang, 2010). A longitudinal study of more than 1,200 individuals across seven decades revealed that the personality trait of conscientiousness (being organized, careful, and disciplined, for example) predicted lower mortality (frequency of death) risk from childhood through late adulthood (Martin, Friedman, & Schwartz, 2007).

Social age refers to social roles and expectations related to a person’s age (Phillipson & Baars, 2007). Consider the role of “mother” and the behaviors that accompany the role (Hoyer & Roodin, 2009). In predicting an adult woman’s behavior, it may be more important to know that she is the mother of a 3-year-old child than to know whether she is 20 or 30 years old.

Life-span expert Bernice Neugarten (1988) argues that in U.S. society chronological age is becoming irrelevant. The 28-year-old mayor, the 35-year-old grandmother, the 65-year-old father of a preschooler, the 55-year-old widow who starts a business, and the 70-year-old student illustrate that old assumptions about the proper timing of life events no longer govern our lives. We still have some expectations for when certain life events—such as getting married, having children, and retiring—should occur. However, chronological age has become a less accurate predictor of these life events in our society. Moreover, issues such as how to deal with intimacy and how to cope with success and failure appear and reappear throughout the life span.

From a life-span perspective, an overall age profile of an individual involves not just chronological age but also biological age, psychological age, and social age.
What is the nature of the early- and later-experience issue in development?

DEVELOPMENTAL ISSUES

Was Ted Kaczynski born a killer, or did his life turn him into one? Kaczynski himself thought that his childhood was the root of his troubles. He grew up as a genius in a boy’s body and never fit in with other children. Did his early experiences determine his later life? Is your own journey through life marked out ahead of time, or can your experiences change your path? Are the experiences you have early in your journey more important than later ones? Is your journey more like taking an elevator up a skyscraper with distinct stops along the way or more like a cruise down a river with smoother ebbs and flows? These questions point to three issues about the nature of development: the roles played by nature and nurture, stability and change, and continuity and discontinuity.

DEVELOPMENTAL CONNECTION

Nature and Nurture. Can specific genes be linked to specific environmental experiences? Chapter 2, p. 74

Nature and Nurture. The nature-nurture issue involves the extent to which development is influenced by nature and by nurture. Nature refers to an organism’s biological inheritance, nurture to its environmental experiences. According to those who emphasize the role of nature, just as a sunflower grows in an orderly way—unless flattened by an unfriendly environment—so too the human grows in an orderly way. An evolutionary and genetic foundation produces commonalities in growth and development (Brooker, 2011; Raven, 2011). We walk before we talk, speak one word before two words, grow rapidly in infancy and less so in early childhood, experience a rush of sex hormones in puberty, reach the peak of our physical strength in late adolescence and early adulthood, and then physically decline. Proponents of the importance of nature acknowledge that extreme environments—those that are psychologically barren or hostile—can depress development. However, they believe that basic growth tendencies are genetically programmed into humans (Mader, 2011).

By contrast, other psychologists emphasize the importance of nurture, or environmental experiences, in development (Kopp, 2011; Sandler, Wolchik, & Schoenfelder, 2011). Experiences run the gamut from the individual’s biological environment (nutrition, medical care, drugs, and physical accidents) to the social environment (family, peers, schools, community, media, and culture).

Stability and Change. Is the shy child who hides behind the sofa when visitors arrive destined to become a wallflower at college dances, or might the child become a sociable, talkative individual? Is the fun-loving, carefree adolescent bound to have difficulty holding down a 9-to-5 job as an adult? These questions reflect the stability-change issue, which involves the degree to which early traits and characteristics persist through life or change.

Many developmentalists who emphasize stability in development argue that stability is the result of heredity and possibly early experiences in life. For example, many argue that if an individual is shy throughout life (as Ted Kaczynski was), this stability is due to heredity and possibly early experiences in which the infant or young child encountered considerable stress when interacting with people.

Developmentalists who emphasize change take the more optimistic view that later experiences can produce change. Recall that in the life-span perspective, plasticity, the potential for change, exists throughout the life span. Experts such as Paul...
Baltes (2003) argue that with increasing age and on average older adults often show less capacity for change in the sense of learning new things than younger adults. However, many older adults continue to be good at practicing what they have learned in earlier times.

The roles of early and later experience are an aspect of the stability-change issue that has long been hotly debated (Phillips & Lowenstein, 2011; Schaie, 2010a, b). Some argue that unless infants experience warm, nurturant caregiving in the first year or so of life, their development will never be optimal (Berlin, Cassidy, & Appleyard, 2008). The later-experience advocates see children as malleable throughout development and later sensitive caregiving as equally important to earlier sensitive caregiving (Siegler & others, 2009).

Continuity and Discontinuity When developmental change occurs, is it gradual or abrupt? Think about your own development for a moment. Did you become the person you are gradually? Or did you experience sudden, distinct changes in your growth? For the most part, developmentalists who emphasize nurture describe development as a gradual, continuous process. Those who emphasize nature often describe development as a series of distinct stages.

The continuity-discontinuity issue focuses on the degree to which development involves either gradual, cumulative change (continuity) or distinct stages (discontinuity). In terms of continuity, as the oak grows from seedling to giant oak, it becomes more of an oak—its development is continuous (see Figure 1.9). Similarly, a child's first word, though seemingly an abrupt, discontinuous event, is actually the result of weeks and months of growth and practice. Puberty might seem abrupt, but it is a gradual process that occurs over several years.

In terms of discontinuity, as an insect grows from a caterpillar to a chrysalis to a butterfly, it passes through a sequence of stages in which change is qualitatively rather than quantitatively different. Similarly, at some point a child moves from not being able to think abstractly about the world to being able to. This is a qualitative, discontinuous change in development rather than a quantitative, continuous change.

Evaluating the Developmental Issues Most life-span developmentalists acknowledge that development is not all nature or all nurture, not all stability or all change, and not all continuity or all discontinuity (Staudinger & Gluck, 2011). Nature and nurture, stability and change, continuity and discontinuity characterize development throughout the human life span.

Although most developmentalists do not take extreme positions on these three important issues, there is spirited debate regarding how strongly development is influenced by each of these factors (Goldsmith, 2011; Phillips & Lowenstein, 2011).
How can we answer questions about the roles of nature and nurture, stability and change, and continuity and discontinuity in development? How can we determine, for example, whether memory declines in older adults can be prevented or whether special care can repair the harm inflicted by child neglect? The scientific method is the best tool we have to answer such questions.

The scientific method is essentially a four-step process: (1) Conceptualize a process or problem to be studied, (2) collect research information (data), (3) analyze data, and (4) draw conclusions.

In step 1, when researchers are formulating a problem to study, they often draw on theories and develop hypotheses. A theory is an interrelated, coherent set of ideas that helps to explain phenomena and make predictions. It may suggest hypotheses, which are specific assertions and predictions that can be tested. For example, a theory on mentoring might state that sustained support and guidance from an adult makes a difference in the lives of children from impoverished backgrounds because the mentor gives the children opportunities to observe and imitate the behavior and strategies of the mentor.

This section outlines key aspects of five theoretical orientations to development: psychoanalytic, cognitive, behavioral and social cognitive, ethological, and ecological. Each contributes an important piece to the life-span development puzzle. Although the theories disagree about certain aspects of development, many of their ideas are complementary rather than contradictory. Together they let us see the total landscape of life-span development in all its richness.

PSYCHOANALYTIC THEORIES

Psychoanalytic theories describe development as primarily unconscious (beyond awareness) and heavily colored by emotion. Psychoanalytic theorists emphasize that behavior is merely a surface characteristic and that a true understanding of development requires analyzing the symbolic meanings of behavior and the deep inner workings of the mind. Psychoanalytic theorists also stress that early experiences with parents extensively shape development. These characteristics are highlighted in the main psychoanalytic theory, that of Sigmund Freud (1856–1939).

Freud’s Theory As Freud listened to, probed, and analyzed his patients, he became convinced that their problems were the result of experiences early in life. He thought that as children grow up, their focus of pleasure and sexual impulses shifts from the mouth to the anus and eventually to the genitals. As a result, we go through five stages of psychosexual development: oral, anal, phallic, latency, and genital (see Figure 1.10). Our adult personality, Freud (1917) claimed, is determined by the way we resolve conflicts between sources of pleasure at each stage and the demands of reality.

Freud’s theory has been significantly revised by a number of psychoanalytic theorists. Many of today’s psychoanalytic theorists maintain that Freud overemphasized sexual instincts; they place more emphasis on cultural experiences as determinants of an individual’s development. Unconscious thought remains a central theme, but thought plays a greater role than Freud envisioned. Next, we will outline the ideas of an important revisionist of Freud’s ideas—Erik Erikson.
Erikson’s Psychosocial Theory  Erik Erikson (1902–1994) recognized Freud’s contributions but believed that Freud misjudged some important dimensions of human development. For one thing, Erikson (1950, 1968) said we develop in psychosocial stages, rather than in psychosexual stages, as Freud maintained. According to Freud, the primary motivation for human behavior is sexual in nature; according to Erikson, it is social and reflects a desire to affiliate with other people. According to Freud, our basic personality is shaped in the first five years of life; according to Erikson, developmental change occurs throughout the life span. Thus, in terms of the early-versus-later-experience issue described earlier in the chapter, Freud viewed early experience as far more important than later experiences, whereas Erikson emphasized the importance of both early and later experiences.

In Erikson’s theory, eight stages of development unfold as we go through life (see Figure 1.11). At each stage, a unique developmental task confronts individuals with a crisis that must be resolved. According to Erikson, this crisis is not a catastrophe but a turning point marked by both increased vulnerability and enhanced potential. The more successfully an individual resolves the crises, the healthier development will be.

Trust versus mistrust is Erikson’s first psychosocial stage, which is experienced in the first year of life. Trust in infancy sets the stage for a lifelong expectation that the world will be a good and pleasant place to live.

Autonomy versus shame and doubt is Erikson’s second stage. This stage occurs in late infancy and toddlerhood (1 to 3 years). After gaining trust in their caregivers, infants begin to discover that their behavior is their own. They start to assert their sense of independence or autonomy. They realize their will. If infants and toddlers are restrained too much or punished too harshly, they are likely to develop a sense of shame and doubt.

Initiative versus guilt, Erikson’s third stage of development, occurs during the preschool years. As preschool children encounter a widening social world, they face new challenges that require active, purposeful, responsible behavior. Feelings of guilt may arise, though, if the child is irresponsible and is made to feel too anxious.

Industry versus inferiority is Erikson’s fourth developmental stage, occurring approximately in the elementary school years. Children now need to direct their energy toward mastering knowledge and intellectual skills. The negative outcome is that the child may develop a sense of inferiority—feeling incompetent and unproductive.

During the adolescent years, individuals face finding out who they are, what they are all about, and where they are going in life. This is Erikson’s fifth developmental stage, identity versus identity confusion. If adolescents explore roles in a healthy manner and arrive at a positive path to follow in life, then they achieve a positive identity; if not, then identity confusion reigns.

Intimacy versus isolation is Erikson’s sixth developmental stage, which individuals experience during the early adulthood years. At this time, individuals face the...
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Jean Piaget, the famous Swiss developmental psychologist, changed the way we think about the development of children's minds. What are some key ideas in Piaget's theory?

Piaget's theory States that children actively construct their understanding of the world and go through four stages of cognitive development.

EVALUATING PSYCHOANALYTIC THEORIES Contributions of psychoanalytic theories include an emphasis on a developmental framework, family relationships, and unconscious aspects of the mind. Criticisms include a lack of scientific support, too much emphasis on sexual underpinnings, and an image of people that is too negative.

COGNITIVE THEORIES Whereas psychoanalytic theories stress the importance of the unconscious, cognitive theories emphasize conscious thoughts. Three important cognitive theories are Piaget's cognitive developmental theory, Vygotsky's sociocultural cognitive theory, and the information-processing theory.

Piaget's Cognitive Developmental Theory Piaget's theory states that children go through four stages of cognitive development as they actively construct their understanding of the world. Two processes underlie this cognitive construction of the world: organization and adaptation. To make sense of our world, we organize our experiences (Carpendale, Muller, & Bibok, 2008). For example, we separate important ideas from less important ideas, and we connect one idea to another. In addition to organizing our observations and experiences, we adapt, adjusting to new environmental demands (Byrnes, 2008).

Piaget (1954) also held that we go through four stages in understanding the world (see Figure 1.12). Each stage is age-related and consists of a distinct way of thinking, a different way of understanding the world. Thus, according to Piaget (1896–1980), the child's cognition is qualitatively different in one stage compared with another. What are Piaget's four stages of cognitive development?

• The sensorimotor stage, which lasts from birth to about 2 years of age, is the first Piagetian stage. In this stage, infants construct an understanding of the world by coordinating sensory experiences (such as seeing and hearing) with physical, motoric actions—hence the term sensorimotor.

• The preoperational stage, which lasts from approximately 2 to 7 years of age, is Piaget's second stage. In this stage, children begin to go beyond simply connecting sensory information with physical action and represent the world with words,
images, and drawings. However, according to Piaget, preschool children still lack the ability to perform what he calls operations, which are internalized mental actions that allow children to do mentally what they previously could only do physically. For example, if you imagine putting two sticks together to see whether they would be as long as another stick, without actually moving the sticks, you are performing a concrete operation.

- The **concrete operational stage**, which lasts from approximately 7 to 11 years of age, is the third Piagetian stage. In this stage, children can perform operations that involve objects, and they can reason logically when the reasoning can be applied to specific or concrete examples. For instance, concrete operational thinkers cannot imagine the steps necessary to complete an algebraic equation, which is too abstract for thinking at this stage of development.

- The **formal operational stage**, which appears between the ages of 11 and 15 and continues through adulthood, is Piaget’s fourth and final stage. In this stage, individuals move beyond concrete experiences and think in abstract and more logical terms. As part of thinking more abstractly, adolescents develop images of ideal circumstances. They might think about what an ideal parent is like and compare their parents to this ideal standard. They begin to entertain possibilities for the future and are fascinated with what they can be. In solving problems, they become more systematic, developing hypotheses about why something is happening the way it is and then testing these hypotheses. We will examine Piaget’s cognitive developmental theory further in Chapters 5, 7, 9, and 11.

**Vygotsky’s Sociocultural Cognitive Theory**  
Like Piaget, the Russian developmentalist Lev Vygotsky (1896–1934) argued that children actively construct their

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Lev Vygotsky was born the same year as Piaget, but he died much earlier, at the age of 37. There is considerable interest today in Vygotsky’s sociocultural cognitive theory of child development. What are some key characteristics of Vygotsky’s theory?
Early computers may be the best candidates for the title of “founding fathers” of information-processing theory. Although many factors stimulated the growth of this theory, none was more important than the computer. Psychologists began to wonder if the logical operations carried out by computers might tell us something about how the human mind works. They drew analogies between a computer’s hardware and the brain and between computer software and cognition.

Vygotsky (1962) gave social interaction and culture far more important roles in cognitive development than Piaget did. Vygotsky’s theory is a sociocultural cognitive theory that emphasizes how culture and social interaction guide cognitive development.

Vygotsky portrayed the child’s development as inseparable from social and cultural activities (Gauvain & Parke, 2010). He maintained that cognitive development involves learning to use the inventions of society, such as language, mathematical systems, and memory strategies. Thus in one culture, children might learn to count with the help of a computer; in another, they might learn by using beads. According to Vygotsky, children’s social interaction with more-skilled adults and peers is indispensable to their cognitive development (Holzman, 2009). Through this interaction, they learn to use the tools that will help them adapt and be successful in their culture (Gauvain & Parke, 2010). In Chapter 7, we examine ideas about learning and teaching that are based on Vygotsky’s theory.

Information-processing theory emphasizes that individuals manipulate information, monitor it, and strategize about it. Unlike Piaget’s theory, but like Vygotsky’s theory, information-processing theory does not describe development as stage-like. Instead, according to this theory, individuals develop a gradually increasing capacity for processing information, which allows them to acquire increasingly complex knowledge and skills (Sternberg, 2010a, b).

Robert Siegler (2006, 2007), a leading expert on children’s information processing, states that thinking is information processing. In other words, when individuals perceive, encode, represent, store, and retrieve information, they are thinking. Siegler emphasizes that an important aspect of development is learning good strategies for processing information. For example, becoming a better reader might involve learning to monitor the key themes of the material being read.

**BEHAVIORAL AND SOCIAL COGNITIVE THEORIES**

Behaviorism essentially holds that we can study scientifically only what can be directly observed and measured. Out of the behavioral tradition grew the belief that development is observable behavior that can be learned through experience with the environment (Klein, 2009). In terms of the continuity-discontinuity issue discussed earlier in this chapter, the behavioral and social cognitive theories emphasize continuity in development and argue that development does not occur in stage-like fashion. Let’s explore two versions of behaviorism: Skinner’s operant conditioning and Bandura’s social cognitive theory.

Skinner’s Operant Conditioning According to B. F. Skinner (1904–1990), through operant conditioning the consequences of a behavior produce changes in the probability of the behavior’s occurrence. A behavior followed by a rewarding stimulus is more likely to recur, whereas a behavior followed by a punishing stimulus is less likely to recur. For example, when an adult smiles at a child after the child has done something, the child is more likely to engage in that behavior again than if the adult gives the child a disapproving look.
In Skinner’s (1938) view, such rewards and punishments shape development. For Skinner the key aspect of development is behavior, not thoughts and feelings. He emphasized that development consists of the pattern of behavioral changes that are brought about by rewards and punishments. For example, Skinner would say that shy people learned to be shy as a result of experiences they had while growing up. It follows that modifications in an environment can help a shy person become more socially oriented.

Bandura’s Social Cognitive Theory Some psychologists agree with the behaviorists’ notion that development is learned and is influenced strongly by environmental interactions. However, unlike Skinner, they also see cognition as important in understanding development (Mischel, 2004). Social cognitive theory holds that behavior, environment, and cognition are the key factors in development.

American psychologist Albert Bandura (1925– ) is the leading architect of social cognitive theory. Bandura (1986, 2004, 2007, 2008, 2009, 2010a, b) emphasizes that cognitive processes have important links with the environment and behavior. His early research program focused heavily on observational learning (also called imitation or modeling), which is learning that occurs through observing what others do. For example, a young boy might observe his father yelling in anger and treating other people with hostility; with his peers, the young boy later acts very aggressively, showing the same characteristics as his father’s behavior. Social cognitive theorists stress that people acquire a wide range of behaviors, thoughts, and feelings through observing others’ behavior and that these observations form an important part of life-span development.

What is cognitive about observational learning in Bandura’s view? He proposes that people cognitively represent the behavior of others and then sometimes adopt this behavior themselves.

Bandura’s (2004, 2007, 2008, 2009, 2010a, b) most recent model of learning and development includes three elements: behavior, the person/cognition, and the environment. An individual’s confidence that he or she can control his or her success is an example of a person factor; strategies are an example of a cognitive factor. As shown in Figure 1.13, behavior, person/cognitive, and environmental factors operate interactively.

Evaluating Behavioral and Social Cognitive Theories Contributions of the behavioral and social cognitive theories include an emphasis on scientific research and environmental determinants of behavior. Criticisms include too little emphasis on cognition in Skinner’s view and giving inadequate attention to developmental changes.

ETHOLOGICAL THEORY

Ethology stresses that behavior is strongly influenced by biology, is tied to evolution, and characterized by critical or sensitive periods. These are specific time frames during which, according to ethologists, the presence or absence of certain experiences has a long-lasting influence on individuals.

European zoologist Konrad Lorenz (1903–1989) helped bring ethology to prominence. In his best-known research, Lorenz (1965) studied the behavior of greylag geese, which will follow their mothers as soon as they hatch. Lorenz separated the eggs laid by one goose into two groups. One group he returned to the goose to be hatched by her. The other group was hatched in an incubator. The goslings in the first group performed as predicted. They followed their mother as soon as they hatched. However, those in the second group, which saw Lorenz when they first hatched, followed him everywhere, as though he were their mother. Lorenz marked the goslings and then placed both groups under a box. Mother goose and “mother” Lorenz stood aside as the box lifted. Each group of goslings went directly to its
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“mother.” Lorenz called this process imprinting, the rapid, innate learning that involves attachment to the first moving object seen.

John Bowlby (1969, 1989) illustrated an important application of ethological theory to human development. Bowlby stressed that attachment to a caregiver over the first year of life has important consequences throughout the life span. In his view, if this attachment is positive and secure, the individual will likely develop positively in childhood and adulthood. If the attachment is negative and insecure, life-span development will likely not be optimal. In Chapter 6, we will explore the concept of infant attachment in much greater detail.

In Lorenz’s view, imprinting needs to take place at a certain, very early time in the life of the animal, or else it will not take place. This point in time is called a critical period. A related concept is that of a sensitive period, and an example of this is the time during infancy when, according to Bowlby, attachment should occur in order to promote optimal development of social relationships.

Another theory that emphasizes biological foundations of development—evolutionary psychology—will be presented in Chapter 2, along with views on the role of heredity in development. In addition, we will examine a number of biological theories of aging in Chapter 17.

Evaluating Ethological Theory Contributions of ethological theory include a focus on the biological and evolutionary basis of development, and the use of careful observations in naturalistic settings. Criticisms include too much emphasis on biological foundations and a belief that the critical and sensitive period concepts might be too rigid.

ECOLOGICAL THEORY

While ethological theory stresses biological factors, ecological theory emphasizes environmental factors. One ecological theory that has important implications for understanding life-span development was created by Urie Bronfenbrenner (1917–2005). Bronfenbrenner’s ecological theory (Bronfenbrenner, 1986, 2004; Bronfenbrenner & Morris, 1998, 2006) holds that development reflects the influence of several environmental systems. The theory identifies five environmental systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem (see Figure 1.14).

The microsystem is the setting in which the individual lives. These contexts include the person’s family, peers, school, and neighborhood. It is in the microsystem that the most direct interactions with social agents take place—with parents, peers, and teachers, for example. The individual is not a passive recipient of experiences in these settings, but someone who helps to construct the settings.

The mesosystem involves relations between microsystems or connections between contexts. Examples are the relation of family experiences to school experiences,
school experiences to religious experiences, and family experiences to peer experiences. For example, children whose parents have rejected them may have difficulty developing positive relations with teachers.

**The exosystem** consists of links between a social setting in which the individual does not have an active role and the individual’s immediate context. For example, a husband’s or child’s experience at home may be influenced by a mother’s experiences at work. The mother might receive a promotion that requires more travel, which might increase conflict with the husband and change patterns of interaction with the child.

**The macrosystem** involves the culture in which individuals live. Remember from earlier in the chapter that culture refers to the behavior patterns, beliefs, and all other products of a group of people that are passed on from generation to generation. Remember also that cross-cultural studies—the comparison of one culture with one or more other cultures—provide information about the generality of development.

**The chronosystem** consists of the patterning of environmental events and transitions over the life course, as well as sociohistorical circumstances. For example, divorce is one transition. Researchers have found that the negative effects of divorce on children often peak in the first year after the divorce (Hetherington, 1993, 2006). By two years after the divorce, family interaction is more stable. As an example of sociohistorical circumstances, consider how the opportunities for women to pursue a career have increased since the 1960s.

Bronfenbrenner (2004; Bronfenbrenner & Morris, 2006) subsequently added biological influences to his theory, describing it as a bioecological theory. Nonetheless, it is still dominated by ecological, environmental contexts (Ceci, 2000).

**Evaluating Ecological Theory** Contributions of the theory include a systematic examination of macro and micro dimensions of environmental systems, and attention to connections between environmental systems. A further contribution of Bronfenbrenner’s theory is an emphasis on a range of social contexts beyond the family, such as neighborhood, religion, school, and workplace, as influential in children’s development (Gauvain & Parke, 2010). Criticisms include giving inadequate attention to biological factors, as well as too little emphasis on cognitive factors.

**AN ECLECTIC THEORETICAL ORIENTATION**

No single theory described in this chapter can explain entirely the rich complexity of life-span development, but each has contributed to our understanding of development. Psychoanalytic theory best explains the unconscious mind. Erikson’s theory best describes the changes that occur in adult development. Piaget’s, Vygotsky’s, and the information-processing views provide the most complete description of cognitive development. The behavioral and social cognitive and ecological theories have been the most adept at examining the environmental determinants of development. The
ethological theories have highlighted biology’s role and the importance of sensitive periods in development.

In short, although theories are helpful guides, relying on a single theory to explain development is probably a mistake. This book instead takes an **eclectic theoretical orientation**, which does not follow any one theoretical approach but rather selects from each theory whatever is considered the best in it. Figure 1.15 compares the main theoretical perspectives in terms of how they view important developmental issues in children’s development.

**Review Connect Reflect**

**Describe the main theories of human development.**

- What characterizes ecological theory? What are some contributions and criticisms of the theory?
- What is an eclectic theoretical orientation?

**The beginning of this section started with a question about whether special care might be able to repair the harm inflicted by child neglect. How might this question be answered differently using the different theories outlined?**

**Which of the life-span theories do you think best explains your own development? Why?**
If they follow an eclectic orientation, how do scholars and researchers determine that one feature of a theory is somehow better than another? The scientific method discussed at the beginning of this chapter provides the guide. Through scientific research, the features of theories can be tested and refined.

Generally, research in life-span development is designed to test hypotheses, which in some cases are derived from the theories just described. Through research, theories are modified to reflect new data, and occasionally new theories arise. How are data about life-span development collected? What types of research designs are used to study life-span development? And what are some ethical considerations in conducting research on life-span development?

METHODS FOR COLLECTING DATA

Whether we are interested in studying attachment in infants, the cognitive skills of children, or social relationships in older adults, we can choose from several ways of collecting data (Graziano & Raulin, 2010). Here we outline the measures most often used, beginning with observation.

Observation. Scientific observation requires an important set of skills (McBurney & White, 2010). For observations to be effective, they have to be systematic. We have to have some idea of what we are looking for. We have to know whom we are observing, when and where we will observe, how the observations will be made, and how they will be recorded.

Where should we make our observations? We have two choices: the laboratory and the everyday world.

When we observe scientifically, we often need to control certain factors that determine behavior but are not the focus of our inquiry (McMillan & Wergin, 2010). For this reason, some research in life-span development is conducted in a laboratory, a controlled setting where many of the complex factors of the “real world” are absent. For example, suppose you want to observe how children react when...
they see other people act aggressively. If you observe children in their homes or schools, you have no control over how much aggression the children observe, what kind of aggression they see, which people they see acting aggressively, or how other people treat the children. In contrast, if you observe the children in a laboratory, you can control these and other factors and therefore have more confidence about how to interpret your observations.

Laboratory research does have some drawbacks, however, including the following:

1. It is almost impossible to conduct research without the participants’ knowing they are being studied.
2. The laboratory setting is unnatural and therefore can cause the participants to behave unnaturally.
3. People who are willing to come to a university laboratory may not fairly represent groups from diverse cultural backgrounds.
4. People who are unfamiliar with university settings, and with the idea of “helping science,” may be intimidated by the laboratory setting.

Naturalistic observation provides insights that we sometimes cannot achieve in the laboratory (Plano Clark & Creswell, 2010). Naturalistic observation means observing behavior in real-world settings, making no effort to manipulate or control the situation. Life-span researchers conduct naturalistic observations at sporting events, child-care centers, work settings, malls, and other places people live in and frequent.

Naturalistic observation was used in one study that focused on conversations in a children’s science museum (Crowley & others, 2001). When visiting exhibits at the science museum, parents were far more likely to engage boys than girls in explanatory talk. This finding suggests a gender bias that encourages boys more than girls to be interested in science (see Figure 1.16).

Survey and Interview Sometimes the best and quickest way to get information about people is to ask them for it. One technique is to interview them directly. A related method is the survey (sometimes referred to as a questionnaire), which is especially useful when information from many people is needed (Gay, Mills, & Airasian, 2009). A standard set of questions is used to obtain peoples’ self-reported attitudes or beliefs about a particular topic. In a good survey, the questions are clear and unbiased, allowing respondents to answer unambiguously.

Surveys and interviews can be used to study a wide range of topics from religious beliefs to sexual habits to attitudes about gun control to beliefs about how to improve schools. Surveys and interviews may be conducted in person, over the telephone, and over the Internet.

One problem with surveys and interviews is the tendency of participants to answer questions in a way that they think is socially acceptable or desirable rather than to say what they truly think or feel (Creswell, 2008). For example, on a survey or in an interview some individuals might say that they do not take drugs even though they do.

Standardized Test A standardized test has uniform procedures for administration and scoring. Many standardized tests allow a person’s performance to be compared with that of other individuals; thus they provide information about individual differences among people (Kingston, 2008). One example is the Stanford-Binet intelligence test, which is described in Chapter 9. Your score on the Stanford-Binet test tells you how your performance compares with that of thousands of other people who have taken the test (Bart & Peterson, 2008).

One criticism of standardized tests is that they assume a person’s behavior is consistent and stable, yet personality and intelligence—two primary targets of standardized testing—can vary with the situation. For example, a person may perform poorly on a standardized intelligence test in an office setting but score much higher at home, where he or she is less anxious.
Case Study  A case study is an in-depth look at a single individual. Case studies are performed mainly by mental health professionals when, for either practical or ethical reasons, the unique aspects of an individual's life cannot be duplicated and tested in other individuals. A case study provides information about one person's experiences; it may focus on nearly any aspect of the subject's life that helps the researcher understand the person's mind, behavior, or other attributes. A researcher may gather information for a case study from interviews and medical records. In later chapters, we discuss vivid case studies, such as that of Michael Rehbein, who had much of the left side of his brain removed at 7 years of age to end severe epileptic seizures.

A case study can provide a dramatic, in-depth portrayal of an individual's life, but we must be cautious when generalizing from this information. The subject of a case study is unique, with a genetic makeup and personal history that no one else shares. In addition, case studies involve judgments of unknown reliability. Researchers who conduct case studies rarely check to see if other professionals agree with their observations or findings.

Physiological Measures  Researchers are increasingly using physiological measures when they study development at different points in the life span. For example, as puberty unfolds, the blood levels of certain hormones increase. To determine the nature of these hormonal changes, researchers analyze blood samples from adolescent volunteers (Susman & Dorn, 2009).

Another physiological measure that is increasingly being used is neuroimaging, especially functional magnetic resonance imaging (fMRI), in which electromagnetic waves are used to construct images of a person's brain tissue and biochemical activity (Nelson, 2011). We will have much more to say about neuroimaging and other physiological measures in later chapters.

RESEARCH DESIGNS

In conducting research on life-span development, in addition to a method for collecting data, you also need a research design. There are three main types of research design: descriptive, correlational, and experimental.

Descriptive Research  All of the data-collection methods that we have discussed can be used in descriptive research, which aims to observe and record behavior. For example, a researcher might observe the extent to which people are altruistic or aggressive toward each other. By itself, descriptive research cannot prove what causes some phenomena, but it can reveal important information about people's behavior (Leedy & Ormrod, 2010; Stake, 2010).

Correlational Research  In contrast to descriptive research, correlational research goes beyond describing phenomena; it provides information that will help us to predict how people will behave. In correlational research, the goal is to describe the strength of the relationship between two or more events or characteristics. The more strongly the two events are correlated (or related or associated), the more effectively we can predict one event from the other (Kiess & Green, 2010).

For example, to study if children of permissive parents have less self-control than other children, you would need to carefully record observations of parents' permissiveness and their children's self-control. You might observe that the higher a parent was in permissiveness, the lower the child was in self-control. You would
correlation coefficient A number based on statistical analysis that is used to describe the degree of association between two variables.

experiment A carefully regulated procedure in which one or more of the factors believed to influence the behavior being studied are manipulated while all other factors are held constant.

Observed Correlation: As permissive parenting increases, children’s self-control decreases.

Possible explanations for this observed correlation

Permissive parenting causes

Children’s lack of self-control causes

Permissive parenting

A third factor such as genetic tendencies or poverty causes

Permissive parenting and children’s lack of self-control

An observed correlation between two events cannot be used to conclude that one event causes the second event. Other possibilities are that the second event causes the first event or that a third event causes the correlation between the first two events.

then analyze these data statistically to yield a numerical measure, called a correlation coefficient, a number based on a statistical analysis that is used to describe the degree of association between two variables. The correlation coefficient ranges from -1.00 to 1.00. A negative number means an inverse relation. In this example, you might find an inverse correlation between permissive parenting and children’s self-control with a coefficient of, say, -0.30. By contrast, you might find a positive correlation of +.30 between parental monitoring of children and children’s self-control.

The higher the correlation coefficient (whether positive or negative), the stronger the association between the two variables. A correlation of 0 means that there is no association between the variables. A correlation of -0.40 is stronger than a correlation of +.20 because we disregard whether the correlation is positive or negative in determining the strength of the correlation.

A caution is in order, however. Correlation does not equal causation. The correlational finding just mentioned does not mean that permissive parenting necessarily causes low self-control in children. It could mean that, but it also could mean that a child’s lack of self-control caused the parents to throw up their arms in despair and give up trying to control the child. It also could mean that other factors, such as heredity or poverty, caused the correlation between permissive parenting and low self-control in children. Figure 1.17 illustrates these possible interpretations of correlational data.

Experimental Research To study causality, researchers turn to experimental research. An experiment is a carefully regulated procedure in which one or more factors believed to influence the behavior being studied are manipulated while all other factors are held constant. If the behavior under study changes when a factor is manipulated, we say that the manipulated factor has caused the behavior to change. In other words, the experiment has demonstrated cause and effect. The cause is the factor that was manipulated. The effect is the behavior that changed because of the manipulation. Nonexperimental research methods (descriptive and correlational research) cannot establish cause and effect because they do not involve manipulating factors in a controlled way (Graziano & Raulin, 2010).

Independent and Dependent Variables Experiments include two types of changeable factors, or variables: independent and dependent. An independent variable is a manipulated, influential, experimental factor. It is a potential cause. The label “independent” is used because this variable can be manipulated independently of other factors to determine its effect. An experiment may include one independent variable or several of them.

A dependent variable is a factor that can change in an experiment, in response to changes in the independent variable. As researchers manipulate the independent variable, they measure the dependent variable for any resulting effect.
For example, suppose that you conducted a study to determine whether women could change the breathing and sleeping patterns of their newborn babies by meditating during pregnancy. You might require one group of pregnant women to engage in a certain amount and type of meditation each day while another group would not meditate; the meditation is thus the independent variable. When the infants are born, you would observe and measure their breathing and sleeping patterns. These patterns are the dependent variable, the factor that changes as the result of your manipulation.

**Experimental and Control Groups** Experiments can involve one or more experimental groups and one or more control groups. An experimental group is a group whose experience is manipulated. A control group is a comparison group that is as much like the experimental group as possible and that is treated in every way like the experimental group except for the manipulated factor (independent variable). The control group serves as a baseline against which the effects of the manipulated condition can be compared.

Random assignment is an important principle for deciding whether each participant will be placed in the experimental group or in the control group. Random assignment means that researchers assign participants to experimental and control groups by chance. It reduces the likelihood that the experiment’s results will be due to any preexisting differences between groups (Mitchell & Jolley, 2010). In the example of the effects of meditation by pregnant women on the breathing and sleeping patterns of their newborns, you would randomly assign half of the pregnant women to engage in meditation over a period of weeks (the experimental group) and the other half to not meditate over the same number of weeks (the control group). Figure 1.18 illustrates the nature of experimental research.

### TIME SPAN OF RESEARCH

Researchers in life-span development have a special concern with studies that focus on the relation of age to some other variable. We have several options: Researchers can study different individuals of different ages and compare them or they can study the same individuals as they age over time.

**Cross-Sectional Approach** The cross-sectional approach is a research strategy that simultaneously compares individuals of different ages. A typical cross-sectional study might include three groups of children: 5-year-olds, 8-year-olds, and 11-year-olds. Another study might include a group of 15-year-olds, 25-year-olds, and 45-year-olds. The groups can be compared with respect to a variety of dependent variables: IQ, memory, peer relations, attachment to parents, hormonal changes, and so on. All of this can be accomplished in a short time. In some studies, data are collected in a single day. Even in large-scale cross-sectional studies with hundreds of subjects, data collection does not usually take longer than several months to complete.

The main advantage of the cross-sectional study is that the researcher does not have to wait for the individuals to grow up or become older. Despite its efficiency, though, the cross-sectional approach has its drawbacks. It gives no information about how individuals change or about the stability of their characteristics. It can obscure the increases and decreases of development—the hills and valleys of growth and development. For example, a cross-sectional study of life satisfaction might reveal average increases and decreases, but it would not show how the life satisfaction of individual adults waxed and waned over the years. It also would not tell us whether the same adults who had positive or negative perceptions of life satisfaction in early adulthood maintained their relative degree of life satisfaction as they became middle-aged or older adults.
The longitudinal approach is a research strategy in which the same individuals are studied over a period of time, usually several years or more. For example, in a longitudinal study of life satisfaction, the same adults might be assessed periodically over a 70-year time span—at the ages of 20, 35, 45, 65, and 90, for example.

Longitudinal studies provide a wealth of information about vital issues such as stability and change in development and the importance of early experience for later development, but they do have drawbacks (Gibbons, Hedeker, & DuToit, 2010). They are expensive and time consuming. The longer the study lasts, the more participants drop out—they move, get sick, lose interest, and so forth. The participants who remain may be dissimilar to those who drop out, biasing the outcome of the study. Those individuals who remain in a longitudinal study over a number of years may be more responsible and conformity-oriented, for example, or they might have more stable lives.

Cohort Effects

A cohort is a group of people who are born at a similar point in history and share similar experiences as a result, such as living through the Vietnam War or growing up in the same city around the same time. These shared experiences may produce a range of differences among cohorts. For example, people who were teenagers during the Great Depression are likely to differ from people who were teenagers during the booming 1990s in their educational opportunities and economic status, in how they were raised, and in their attitudes toward sex and religion. In life-span development research, cohort effects are due to a person’s time of birth, era, or generation but not to actual age.

Cohort effects are important because they can powerfully affect the dependent measures in a study ostensibly concerned with age (Schaie, 2010a, b). Researchers have shown it is especially important to be aware of cohort effects when assessing adult intelligence (Schaie, 2010a, b). Individuals born at different points in time—such as 1920, 1940, and 1960—have had varying opportunities for education. Individuals born in earlier years had less access to education, and this fact may have a significant effect on how this cohort performs on intelligence tests.

Cross-sectional studies can show how different cohorts respond, but they can confuse age changes and cohort effects. Longitudinal studies are effective in studying age changes but only within one cohort.

So far we have discussed many aspects of research in life-span development, but where can you read about this research firsthand? Read Connecting Through Research to find out.
Where Is Life-Span Research Published?

Regardless of whether you pursue a career in life-span development, psychology, or some related scientific field, you can benefit by learning about the journal process. As a student, you might be required to look up original research in journals. As a parent, teacher, or nurse you might want to consult journals to obtain information that will help you understand and work more effectively with people. And, as an inquiring person, you might look up information in journals after you have heard or read something that piqued your curiosity.

A journal publishes scholarly and academic information, usually in a specific domain—like physics, math, sociology, or, our current interest, life-span development. Scholars in these fields publish most of their research in journals, which are the source of core information in virtually every academic discipline.

An increasing number of journals publish information about life-span development. Among the leading journals in life-span development are *Developmental Psychology*, *Child Development*, *Pediatrics*, *Pediatric Nursing*, *The Journals of Gerontology*, *Infant Behavior and Development*, *Journal of Research on Adolescence*, *Journal of Adult Development*, *Journal of Gerontological Nursing*, *Psychology and Aging*, *Human Development*, and many others. Also, a number of journals that do not focus solely on development publish articles on various aspects of human development. These journals include *Journal of Educational Psychology*, *Sex Roles*, *Journal of Cross-Cultural Research*, *Journal of Marriage and the Family*, and *Journal of Consulting and Clinical Psychology*.

Every journal has a board of experts who evaluate articles submitted for publication. Each submitted paper is accepted or rejected on the basis of such factors as its contribution to the field, methodological excellence, and clarity of writing. *Some of the most prestigious journals reject as many as 80 to 90 percent of the articles submitted.*

Journal articles are usually written by professionals for other professionals in the specialized field of the journal’s focus; therefore, they often contain technical language and terms specific to the discipline that are difficult for nonprofessionals to understand. *Their organization often takes this course: abstract, introduction, method, results, discussion, and references.*

The *abstract* is a brief summary that appears at the beginning of the article. The abstract lets readers quickly determine whether the article is relevant to their interests. The *introduction* introduces the problem or issue that is being studied. It includes a concise review of research relevant to the topic, theoretical ties, and one or more hypotheses to be tested. The *method* section consists of a clear description of the subjects evaluated in the study, the measures used, and the procedures that were followed. The method section should be sufficiently clear and detailed so that by reading it another researcher could repeat or replicate the study. The *results* section reports the analysis of the data collected. In most cases, the results section includes statistical analyses that are difficult for nonprofessionals to understand. The *discussion* section describes the author’s conclusions, inferences, and interpretation of what was found. Statements are usually made about whether the hypotheses presented in the introduction were supported, limitations of the study, and suggestions for future research. The last part of the journal article, called *references*, includes bibliographic information for each source cited in the article. The references section is often a good source for finding other articles relevant to the topic that interests you.

Where do you find journals such as those described above? Your college or university library likely has some of them, and some public libraries also carry journals. Online resources such as PsycINFO and PubMed, which can facilitate the search for journal articles, are available to students on many campuses.

The research published in the journals mentioned above shapes our lives. It not only informs the research of other life-span development researchers, but it also informs the practices of law and policy makers, physicians, educators, parents, and many others. In fact, much of what you will find that is new in this edition of this textbook comes directly from the research that can be found in the journals mentioned above.
CONDUCTING ETHICAL RESEARCH

Ethics in research may affect you personally if you ever serve as a participant in a study. In that event, you need to know your rights as a participant and the responsibilities of researchers to assure that these rights are safeguarded.

If you ever become a researcher in life-span development yourself, you will need an even deeper understanding of ethics. Even if you only carry out experimental projects in psychology courses, you must consider the rights of the participants in those projects. A student might think, “I volunteer in a home for the mentally retarded several hours per week. I can use the residents of the home in my study to see if a particular treatment helps improve their memory for everyday tasks.” But without proper permissions, the most well-meaning, kind, and considerate studies still violate the rights of the participants.

Today, proposed research at colleges and universities must pass the scrutiny of a research ethics committee before the research can be initiated. In addition, the American Psychological Association (APA) has developed ethics guidelines for its members. The code of ethics instructs psychologists to protect their participants from mental and physical harm. The participants’ best interests need to be kept foremost in the researcher’s mind (Fisher, 2009; Wiersman & Jurs, 2009). APA’s guidelines address four important issues:

1. **Informed consent.** All participants must know what their research participation will involve and what risks might develop. Even after informed consent is given, participants must retain the right to withdraw from the study at any time and for any reason.

2. **Confidentiality.** Researchers are responsible for keeping all of the data they gather on individuals completely confidential and, when possible, completely anonymous.

3. **Debriefing.** After the study has been completed, participants should be informed of its purpose and the methods that were used. In most cases, the experimenter also can inform participants in a general manner beforehand about the purpose of the research without leading participants to behave in a way they think that the experimenter is expecting.

4. **Deception.** In some circumstances, telling the participants beforehand what the research study is about substantially alters the participants’ behavior and invalidates the researcher’s data. In all cases of deception, however, the psychologist must ensure that the deception will not harm the participants and that the participants will be debriefed (told the complete nature of the study) as soon as possible after the study is completed.

MINIMIZING BIAS

Studies of life-span development are most useful when they are conducted without bias or prejudice toward any particular group of people. Of special concern is bias based on gender and bias based on culture or ethnicity.

**Gender Bias.** For most of its existence, our society has had a strong gender bias, a preconceived notion about the abilities of women and men that prevented individuals from pursuing their own interests and achieving their potential (Best, 2010; UNICEF, 2010). Gender bias also has had a less obvious effect within the field of life-span development. For example, it is not unusual for conclusions to be drawn about females’ attitudes and behaviors from research conducted with males as the only participants (Hyde, 2007).

Furthermore, when researchers find gender differences, their reports sometimes magnify those differences (Denmark & others, 1988). For example, a researcher
might report that 74 percent of the men in a study had high achievement expectations versus only 67 percent of the women and go on to talk about the differences in some detail. In reality, this might be a rather small difference. It also might disappear if the study were repeated or the study might have methodological problems that don't allow such strong interpretations.

Pam Reid is a leading researcher who studies gender and ethnic bias in development. You can read about Pam's interests in Connecting With Careers.

Cultural and Ethnic Bias The realization that research on life-span development needs to include more people from diverse ethnic groups has also been building (Graham, 2006; Rowley, Kurtz-Costes, & Cooper, 2010). Historically, people from ethnic minority groups (African American, Latino, Asian American, and Native American) were excluded from most research in the United States and simply thought of as variations from the norm or average. If minority individuals were included in samples and their scores didn't fit the norm, they were viewed as confounds or “noise” in data and discounted. Given the fact that individuals from diverse ethnic groups were excluded from research on life-span development for so long, we might reasonably conclude that people's real lives are perhaps more varied than research data have indicated in the past.

Researchers also have tended to overgeneralize about ethnic groups (Banks, 2010; Swanson, Edwards, & Spencer, 2010). Ethnic gloss is using an ethnic label such as African American or Latino in a superficial way that portrays an ethnic group as being more homogeneous than it really is.
group as being more homogeneous than it really is (Trimble, 1988). For example, a researcher might describe a research sample like this: “The participants were 60 Latinos.” A more complete description of the Latino group might be something like this: “The 60 Latino participants were Mexican Americans from low-income neighborhoods in the southwestern area of Los Angeles. Thirty-six were from homes in which Spanish is the dominant language spoken, 24 from homes in which English is the main language spoken. Thirty were born in the United States, 30 in Mexico. Twenty-eight described themselves as Mexican American, 14 as Mexican, 9 as American, 6 as Chicano, and 3 as Latino.” Ethnic gloss can cause researchers to obtain samples of ethnic groups that are not representative of the group’s diversity, which can lead to overgeneralization and stereotyping.

Ross Parke and Raymond Buriel (2006) recently described how research on ethnic minority children and their families has not been given adequate attention, especially in light of their significant rate of growth. Until recently, ethnic minority families were combined in the category “minority,” which masks important differences among ethnic groups as well as diversity within an ethnic group. When research has been conducted on ethnic groups, most often they are compared to non–Latino Whites to identify group differences. An assumption in two-group studies is that ethnic minority children have not advanced far enough to be the same as non–Latino White children and that this developmental lag contributes to ethnic minority children’s problems. Recently, some researchers have replaced two-group studies with more in-depth examination of variations within a single ethnic group. For example, a researcher might study how parents in an ethnic group adapt to the challenges they face as a minority in U.S. society and how these experiences contribute to the goals they have for their children.

The continued growth of minority families in the United States in approaching decades will mainly be due to the immigration of Latino and Asian families. Researchers need “to take into account their acculturation level and generational status of parents and children,” and how they influence family processes and child outcomes (Parke & Buriel, 2006, p. 487). More attention also needs to be given to biculturalism because the complexity of diversity means that some children of color identify with two or more ethnic groups. And language development research needs to focus more on second-language acquisition (usually English) and bilingualism and how they are linked to school achievement (Levine & McCloskey, 2009).

Look at these two photographs, one of all non-Latino White males, the other of a diverse group of females and males from different ethnic groups, including some non-Latino White males. Consider a topic in life-span development, such as parenting love, or cultural values. If you were conducting research on this topic, might the results of the study be different depending on whether the participants in your study were the individuals in the photograph on the left or the right?
In Chapter 2, we will continue to learn about theory and research as we explore the biological underpinnings of life-span development. The influence of human evolution on development will be covered, including a discussion of natural selection and adaptive behavior. We will examine how the human genome works, the collaborative nature of genes, and how our DNA plays a role in who we will become. We will explore the challenges and choices people encounter when deciding to reproduce, including infertility and adoption. And we will end by looking at the many sides of the age-old nature-nurture debate, discussing how heredity and environment interact.

**looking forward**

**Review**
- What methods do researchers use to collect data on life-span development?
- What research designs are used to study human development?
- How is research conducted on the time span of people’s lives?
- What are researchers’ ethical responsibilities to the people they study?
- How can gender, cultural, and ethnic bias affect the outcome of a research study?

**Connect**
- Earlier in the chapter, you read about normative age-graded influences, normative history-graded influences, and normative life events. Describe how these influences relate to what you just read about cohort effects.

**Reflect Your Own Personal Journey of Life**
- You and your parents grew up at different points in time. Consider some ways that you are different from your parents. Do you think some of your differences might be due to cohort effects? Explain.
Development is the pattern of change that begins at conception and continues through the human life span. It includes both growth and decline. Studying life-span development helps prepare us to take responsibility for children, gives us insight about our own lives, and gives us knowledge about what our lives will be like as we age.

The life-span perspective includes these basic conceptions: Development is lifelong, multidimensional, multidirectional, and plastic; its study is multidisciplinary; it is contextual; it involves growth, maintenance, and regulation of loss; and it is a co-construction of biological, cultural, and individual factors. Three important sources of contextual influences are (1) normative age-graded influences, (2) normative history-graded influences, and (3) nonnormative life events.

Health and well-being, parenting, education, sociocultural contexts and diversity, and social policy are all areas of contemporary concern that are closely tied to life-span development. Important dimensions of the sociocultural context include culture, ethnicity, socioeconomic status, and gender. There is increasing interest in social policy issues related to children and to older adults.

Three key developmental processes are biological, cognitive, and socioemotional. Throughout development, there are extensive connections between these processes.

The life span is commonly divided into these periods of development: prenatal, infancy, early childhood, middle and late childhood, adolescence, early adulthood, middle adulthood, and late adulthood. Recently, life-span developmentalists have described the human life span in terms of four ages with a special focus on the third and fourth ages, as well as a distinction between the young-old and oldest-old. An important aspect of life-span development involves connections across periods of development.

According to some experts on life-span development, too much emphasis is placed on chronological age. In studies covering adolescence through old age, people report that they are not happier at one point in development than at others. We often think of age only in terms of chronological age, but a full evaluation of age requires consideration of chronological, biological, psychological, and social age. Neugarten emphasizes that we are moving toward a society in which chronological age is only a weak predictor of development in adulthood.

The nature-nurture issue focuses on the extent to which development is mainly influenced by nature (biological inheritance) or nurture (experience). The stability-change issue focuses on the degree to which we become older renditions of our early experience or develop into someone different from who we were earlier in development. A special aspect of the stability-change issue is the extent to which development is determined by early versus later experiences. Developmentalists describe development as continuous (gradual, a cumulative change) or as discontinuous (abrupt, a sequence of stages). Most developmentalists recognize that extreme positions on the nature-nurture, stability-change, and continuity-discontinuity issues are unwise. Despite this consensus, there is still spirited debate on these issues.
 SECTION 1 The Life-Span Perspective

• The scientific method involves four main steps: (1) conceptualize a problem, (2) collect data, (3) analyze data, and (4) draw conclusions. Theory is often involved in conceptualizing a problem. A theory is an interrelated, coherent set of ideas that helps to explain phenomena and to make predictions. Hypotheses are specific assertions and predictions, often derived from theory, that can be tested. According to psychoanalytic theories, development primarily depends on the unconscious mind and is heavily couched in emotion. Freud also argued that individuals go through five psychosexual stages. Erikson’s theory emphasizes eight psychosocial stages of development: trust versus mistrust, autonomy versus shame and doubt, initiative versus guilt, industry versus inferiority, identity versus identity confusion, intimacy versus isolation, generativity versus stagnation, and integrity versus despair. Contributions of psychoanalytic theories include an emphasis on a developmental framework, family relationships, and unconscious aspects of the mind. Criticisms include a lack of scientific support, too much emphasis on sexual underpinnings, and an image of people that is too negative.

• Three main cognitive theories are Piaget’s, Vygotsky’s, and information processing. Cognitive theories emphasize thinking, reasoning, language, and other cognitive processes. Piaget proposed a cognitive developmental theory in which children use their cognition to adapt to their world. In Piaget’s theory, children go through four cognitive stages: sensorimotor, preoperational, concrete operational, and formal operational. Vygotsky’s sociocultural cognitive theory emphasizes how culture and social interaction guide cognitive development. The information-processing approach emphasizes that individuals manipulate information, monitor it, and strategize about it. Contributions of cognitive theories include an emphasis on the active construction of understanding and a positive view of development. Criticisms include giving too little attention to individual variations and skepticism about the pureness of Piaget’s stages.

• Two main behavioral and social cognitive theories are Skinner’s operant conditioning and Bandura’s social cognitive theory. In Skinner’s operant conditioning, the consequences of a behavior produce changes in the probability of the behavior’s occurrence. In Bandura’s social cognitive theory, observational learning is a key aspect of life-span development. Bandura emphasizes reciprocal interactions among person/cognition, behavior, and environment. Contributions of the behavioral and social cognitive theories include an emphasis on scientific research and a focus on environmental factors. Criticisms include inadequate attention to developmental changes and, in Skinner’s view, too little attention to cognition.

• Ethology stresses that behavior is strongly influenced by biology, is tied to evolution, and is characterized by critical or sensitive periods. Contributions of ethological theory include a focus on the biological and evolutionary basis of development. Criticisms include a belief that the concepts of critical and sensitive periods may be too rigid.

• Ecological theory emphasizes environmental contexts. Bronfenbrenner’s environmental systems view of development proposes five environmental systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem. Contributions of the theory include a systematic examination of macro and micro dimensions of environmental systems and attention to connections between them. Criticisms include giving inadequate attention to biological factors, as well as a lack of emphasis on cognitive factors.

• An eclectic theoretical orientation does not follow any one theoretical approach but rather selects from each theory whatever is considered the best in it.

4 Research in Life-Span Development

• Methods for collecting data about life-span development include observation (in a laboratory or a naturalistic setting), survey (questionnaire) or interview, standardized test, case study, and physiological measures.
Three main research designs are descriptive, correlational, and experimental. Descriptive research aims to observe and record behavior. In correlational research, the goal is to describe the strength of the relationship between two or more events or characteristics. Experimental research involves conducting an experiment, which can determine cause and effect. An independent variable is the manipulated, influential, experimental factor. A dependent variable is a factor that can change in an experiment, in response to changes in the independent variable. Experiments can involve one or more experimental groups and control groups. In random assignment, researchers assign participants to experimental and control groups by chance.

When researchers decide about the time span of their research, they can conduct cross-sectional or longitudinal studies. Life-span researchers are especially concerned about cohort effects.

Researchers’ ethical responsibilities include seeking participants’ informed consent, ensuring their confidentiality, debriefing them about the purpose and potential personal consequences of participating, and avoiding unnecessary deception of participants.

Researchers need to guard against gender, cultural, and ethnic bias in research. Every effort should be made to make research equitable for both females and males. Individuals from varied ethnic backgrounds need to be included as participants in life-span research, and overgeneralization about diverse members within a group must be avoided.

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Careers in Life-Span Development

The field of life-span development offers an amazing breadth of careers that can provide extremely satisfying work. College and university professors teach courses in many areas of life-span development. Teachers impart knowledge, understanding, and skills to children and adolescents. Counselors, clinical psychologists, nurses, and physicians help people of different ages to cope more effectively with their lives and improve their well-being.

These and many other careers related to life-span development offer many rewards. By working in the field of life-span development, you can help people to improve their lives, understand yourself and others better, possibly advance the state of knowledge in the field, and have an enjoyable time while you are doing these things. Many careers in life-span development pay reasonably well. For example, psychologists earn well above the median salary in the United States.

If you are considering a career in life-span development, would you prefer to work with infants? children? adolescents? older adults? As you go through this term, try to spend some time with people of different ages. Observe their behavior. Talk with them about their lives. Think about whether you would like to work with people of this age in your life’s work.

In addition, to find out about careers in life-span development you might talk with people who work in various jobs. For example, if you have some interest in becoming a school counselor, call a school, ask to speak with a counselor, and set up an appointment to discuss the counselor’s career and work. If you have an interest in becoming a nurse, call the nursing department at a hospital and set up an appointment to speak with the nursing coordinator about a nursing career.

Another way of exploring careers in life-span development is to work in a related job while you are in college. Many colleges and universities offer internships or other work experiences for students who major in specific fields. Course credit or pay is given for some of these jobs. Take advantage of these opportunities. They can help you decide if this is the right career for you, and they can help you get into graduate school, if you decide you want to go.

An advanced degree is not absolutely necessary for some careers in life-span development, but usually you can considerably expand your opportunities (and income) by obtaining a graduate degree. If you think you might want to go to graduate school, talk with one or more professors about your interests, keep a high grade-point average, take appropriate courses, and realize that you likely will need to take the Graduate Record Examination at some point.

In the upcoming sections, we will profile a number of careers in four areas: education/research; clinical/counseling; medical/nursing; physical development; and families/relationships. These are not the only career options in life-span development, but the profiles should give you an idea of the range of opportunities available. For each career, we will describe the work and address the amount of education required and the nature of the training. We have provided page numbers after some entries telling you where within the text you can find Connecting With Careers, the career profiles of people who hold some of these positions. The Web site for this book gives more detailed information about these careers in life-span development.

Education/Research
Numerous careers in life-span development involve education or research. The opportunities range from college professor to preschool teacher to school psychologist.

College/University Professor
Professors teach courses in life-span development at many types of institutions, including research universities with master’s or Ph.D. programs in life-span development, four-year colleges with no graduate programs, and community colleges. The courses in life-span development are offered in many different programs and schools, including psychology, education, nursing, child and family studies, social work, and medicine. In addition to teaching at the undergraduate or graduate level (or both), professors may conduct research, advise students or direct their research, and serve on college or university committees. Research is part of a professor’s job description at most universities with master’s and Ph.D. programs, but some college professors do not conduct research and focus instead on teaching.

Teaching life-span development at a college or university almost always requires a Ph.D. or master’s degree. Obtaining a Ph.D. usually takes four to six years of graduate work; a master’s degree requires approximately two years. The training involves taking graduate courses, learning to conduct research, and attending and presenting papers at professional meetings. Many graduate students work as teaching or research assistants for professors in an apprenticeship relationship that helps them to become competent teachers and researchers. Read the profiles of professors on p. 523 and p. 613.

Researcher
Some individuals in the field of life-span development work in research positions. They might work for a university, a government agency such as the National Institute of Mental Health, or private industry. They generate research ideas, plan studies, carry out the research, and usually attempt to publish the research in a scientific journal. A researcher often works in collaboration with other researchers. One researcher might spend much of his or her time in a laboratory; another researcher might work out in the field, such as in schools, hospitals, and so on. Most researchers in life-span development have either a master’s or a Ph.D.

Elementary or Secondary School Teacher
Elementary and secondary school teachers teach one or more subject areas, preparing the curriculum, giving tests, assigning grades, monitoring students’ progress, conducting parent-teacher conferences, and attending workshops. Becoming an elementary or secondary school teacher requires a minimum of an undergraduate degree. The training involves taking a wide range of courses with a major or concentration in education as well as completing supervised practice teaching.

Exceptional Children (Special Education) Teacher
Teachers of exceptional children spend concentrated time with children who have a disability such as ADHD, mental retardation, or cerebral palsy, or with children who are gifted.
Usually some of their work occurs outside of the students’ regular classroom and some of it inside the students’ regular classroom. The exceptional children teacher works closely with the student’s regular classroom teacher and parents to create the best educational program for the student. Teachers of exceptional children often continue their education after obtaining their undergraduate degree and attain a master's degree.

**Early Education Educator**

Early childhood educators work on college faculties and usually teach in community colleges that award an associate degree in early childhood education. They have a minimum of a master's degree in their field. In graduate school, they take courses in early childhood and receive supervisory training in childcare or early childhood programs.

**Preschool/Kindergarten Teacher**

Preschool teachers teach mainly 4-year-old children, and kindergarten teachers primarily teach 5-year-old children. They usually have an undergraduate degree in education, specializing in early childhood education. State certification to become a preschool or kindergarten teacher usually is required.

**Family and Consumer Science Educator**

Family and consumer science educators may specialize in early childhood education or instruct middle and high school students about such matters as nutrition, interpersonal relationships, human sexuality, parenting, and human development. Hundreds of colleges and universities throughout the United States offer two- and four-year degree programs in family and consumer science. These programs usually require an internship. Additional education courses may be needed to obtain a teaching certificate. Some family and consumer educators go on to graduate school for further training, which provides a background for possible jobs in college teaching or research. Read a profile of a family and consumer science educator on p. 362.

**Educational Psychologist**

Educational psychologists most often teach in a college or university and conduct research in such areas of educational psychology as learning, motivation, classroom management, and assessment. They help train students for positions in educational psychology, school psychology, and teaching. Most educational psychologists have a doctorate in education, which takes four to six years of graduate work. Read a profile of an educational psychologist on p. 39.

**School Psychologist**

School psychologists focus on improving the psychological and intellectual well-being of elementary, middle/junior, and high school students. They give psychological tests, interview students and their parents, consult with teachers, and may provide counseling to students and their families. They may work in a centralized office in a school district or in one or more schools.

School psychologists usually have a master's or doctoral degree in school psychology. In graduate school, they take courses in counseling, assessment, learning, and other areas of education and psychology.

**Gerontologist**

Gerontologists usually work in research in some branch of the federal or state government. They specialize in the study of aging with a particular focus on government programs for older adults, social policy, and delivery of services to older adults. In their research, gerontologists define problems to be studied, collect data, interpret the results, and make recommendations for social policy. Most gerontologists have a master’s or doctoral degree and have taken a concentration of coursework in adult development and aging.

**Clinical/Counseling**

There are a wide variety of clinical and counseling jobs that are linked with life-span development. These range from child clinical psychologist to adolescent drug counselor to geriatric psychiatrist.

**Clinical Psychologist**

Clinical psychologists seek to help people with psychological problems. They work in a variety of settings, including colleges and universities, clinics, medical schools, and private practice. Some clinical psychologists only conduct psychotherapy; others do psychological assessment and psychotherapy; some also do research. Clinical psychologists may specialize in a particular age group, such as children (child clinical psychologist) or older adults (often referred to as a geropsychologist).

Clinical psychologists have either a Ph.D. (which involves clinical and research training) or a Psy.D. degree (which only involves clinical training). This graduate training usually takes five to seven years and includes courses in clinical psychology and a one-year supervised internship in an accredited setting toward the end of the training. Many geropsychologists pursue a year or two of postdoctoral training. Most states require clinical psychologists to pass a test in order to become licensed in the state and to call themselves clinical psychologists. Read a profile of a clinical psychologist on page 10.

**Psychiatrist**

Psychiatrists obtain a medical degree and then do a residency in psychiatry. Medical school takes approximately four years and the psychiatry residency another three to four years. Unlike most psychologists (who do not go to medical school), psychiatrists can administer drugs to clients. (Recently, several states gave clinical psychologists the right to prescribe drugs.)

Like clinical psychologists, psychiatrists might specialize in working with children (child psychiatry) or with older adults (geriatric psychiatry). Psychiatrists might work in medical schools in teaching and research roles, in a medical clinic or hospital, or in private practice. In addition to administering drugs to help improve the lives of people with psychological problems, psychiatrists also may conduct psychotherapy. Read a profile of a child psychiatrist on p. 341.

**Counseling Psychologist**

Counseling psychologists work in the same settings as clinical psychologists and may do psychotherapy, teach, or conduct research. Many counseling psychologists do not do therapy with individuals who have severe mental disorders, such as schizophrenia.

Counseling psychologists go through much the same training as clinical psychologists, although in a graduate program in counseling rather than clinical psychology. Counseling psychologists have either a master's degree or a doctoral degree. They also must go through a licensing procedure. One type of master's degree in counseling leads to the designation of licensed professional counselor.

**School Counselor**

School counselors help students to cope with adjustment problems, identify their abilities and interests, develop academic plans, and explore career options. The focus of the job depends on the age of the children. High school counselors advise students about vocational and technical training and admissions requirements for college, as well as about taking entrance exams, applying for financial aid, and choosing a major. Elementary school counselors mainly counsel students about social and personal problems. They may observe children in the classroom and at play as part of their work. School counselors may work with students individually, in small groups, or even in a classroom. They often consult with parents, teachers, and school administrators when trying to help students. School counselors usually have a master's degree in counseling.

**Career Counselor**

Career counselors help individuals to identify their best career options and guide them in
apply for jobs. They may work in private industry or at a college or university. They usually interview individuals and give them vocational and/or psychological tests to identify appropriate careers that fit their interests and abilities. Sometimes they help individuals to create résumés or conduct mock interviews to help them feel comfortable in a job interview. They might arrange and promote job fairs or other recruiting events to help individuals obtain jobs.

Rehabilitation Counselor
Rehabilitation counselors work with individuals to identify career options, develop adjustment and coping skills to maximize independence, and resolve problems created by a disability. A master’s degree in rehabilitation counseling or guidance or counseling psychology is generally considered the minimum education requirement.

Social Worker
Many social workers are involved in helping people with social or economic problems. They may investigate, evaluate, and attempt to rectify reported cases of abuse, neglect, endangerment, or domestic disputes. They may intervene in families and provide counseling and referral services to individuals and families. Some social workers specialize in a certain area. For example, a medical social worker might coordinate support services to people with a long-term disability; family care social workers often work with families with children or an older adult who needs support services. Social workers often work for publicly funded agencies at the city, state, or national level, although increasingly they work in the private sector in areas such as drug rehabilitation and family counseling.

Social workers have a minimum of an undergraduate degree from a school of social work that includes coursework in sociology and psychology. Some social workers also have a master’s or doctoral degree. For example, medical social workers have a master’s degree in social work (M.S.W.) and complete graduate coursework and supervised clinical experiences in medical settings.

Drug Counselor
Drug counselors provide counseling to individuals with drug-abuse problems. Some drug counselors specialize in working with adolescents or older adults. They may work on an individual basis with a substance abuser or conduct group therapy. They may work in private practice, with a state or federal government agency, with a company, or in a hospital.

At a minimum, drug counselors complete an associate’s or certificate program. Many have an undergraduate degree in substance-abuse counseling, and some have master’s and doctoral degrees. Most states provide a certification procedure for obtaining a license to practice drug counseling.

Medical/Nursing/Physical Development
This third main area of careers in life-span development includes a wide range of choices in the medical and nursing areas, as well as jobs pertaining to improving some aspect of a person’s physical development.

Obstetrician/Gynecologist
An obstetrician/gynecologist prescribes prenatal and postnatal care, performs deliveries in maternity cases, and treats diseases and injuries of the female reproductive system. Becoming an obstetrician/gynecologist requires a medical degree plus three to five years of residency in obstetrics/gynecology. Obstetricians may work in private practice, a medical clinic, a hospital, or a medical school.

Pediatrician
A pediatrician monitors infants’ and children’s health, works to prevent disease or injury, helps children attain optimal health, and treats children with health problems. Pediatricians have earned a medical degree and completed a three- to five-year residency in pediatrics.

Pediatricians may work in private practice, a medical clinic, a hospital, or a medical school. Many pediatricians on the faculty of medical schools also teach and conduct research on children’s health and diseases. Read the profile of a pediatrician on p. 124.

Geriatric Physician
Geriatric physicians diagnose medical problems of older adults, evaluate treatment options, and make recommendations for nursing care or other arrangements. They have a medical degree and specialized in geriatric medicine by doing a three- to five-year residency. Like other doctors, geriatric physicians may work in private practice, a medical clinic, a hospital, or a medical school. Those in medical school settings may not only treat older adults but also teach future physicians and conduct research.

Neonatal Nurse
Neonatal nurses deliver care to newborn infants. They may work with infants born under normal circumstances or premature and critically ill neonates. A minimum of an undergraduate degree in nursing with a specialization in the newborn is required. This training involves coursework in nursing and the biological sciences, as well as supervised clinical experiences.

Nurse-Midwife
A nurse-midwife formulates and provides comprehensive care to expectant mothers as they prepare to give birth, guides them through the birth process, and cares for them after the birth. The nurse-midwife also may provide care to the newborn, counsel parents on the infant’s development and parenting, and provide guidance about health practices. Becoming a nurse-midwife generally requires an undergraduate degree from a school of nursing. A nurse-midwife most often works in a hospital setting. Read the profile of a perinatal nurse on p. 96.

Pediatric Nurse
Pediatric nurses monitor infants’ and children’s health, work to prevent disease or injury, and help children attain optimal health. They may work in hospitals, schools of nursing, or with pediatricians in private practice or at a medical clinic.

Pediatric nurses have a degree in nursing that takes two to five years to complete. They take courses in biological sciences, nursing care, and pediatrics, usually in a school of nursing. They also undergo supervised clinical experiences in medical settings. Some pediatric nurses go on to earn a master’s or doctoral degree in pediatric nursing.

Geriatric Nurse
Geriatric nurses seek to prevent or intervene in the chronic or acute health problems of older adults. They may work in hospitals, nursing homes, schools of nursing, or with geriatric medical specialists or psychiatrists in a medical clinic or in private practice. Like pediatric nurses, geriatric nurses take courses in a school of nursing and obtain a degree in nursing, which takes from two to five years. They complete courses in biological sciences, nursing care, and mental health as well as supervised clinical training in geriatric settings. They also may obtain a master’s or doctoral degree in their specialty. Read a profile of a geriatric nurse on p. 555.

Physical Therapist
Physical therapists work with individuals who have a physical problem due to disease or injury to help them function as competently as possible. They may consult with other professionals and coordinate services for the individual. Many physical therapists work with people of all ages, although some specialize in working with a specific age group, such as children or older adults.

Physical therapists usually have an undergraduate degree in physical therapy and are licensed by a state. They take courses and experience supervised training in physical therapy.
**Occupational Therapist**

Occupational therapists initiate the evaluation of clients with various impairments and manage their treatment. They help people regain, develop, and build skills that are important for independent functioning, health, well-being, security, and happiness. An “Occupational Therapist Registered” (OTR) must have a master’s and/or doctoral degree with education ranging from two to six years. Training includes occupational therapy courses in a specialized program. National certification is required and licensing/registration is required in some states.

**Therapeutic/Recreation Therapist**

Therapeutic/recreation therapists maintain or improve the quality of life for people with special needs through intervention, leisure education, and recreation. They work in hospitals, rehabilitation centers, local government agencies, at-risk youth programs, as well as other settings. Becoming a therapeutic/recreation therapist requires an undergraduate degree with coursework in leisure studies and a concentration in therapeutic recreation. National certification is usually required. Coursework in anatomy, special education, and psychology is beneficial.

**Audiologist**

Audiologists assess and identify the presence and severity of hearing loss, as well as problems in balance. They may work in a medical clinic, with a physician in private practice, in a hospital, or in a medical school.

An audiologist completes coursework and supervised training to earn a minimum of an undergraduate degree in hearing science. Some audiologists also go on to obtain a master’s or doctoral degree.

**Speech Therapist**

Speech therapists identify, assess, and treat speech and language problems. They may work with physicians, psychologists, social workers, and other health care professionals in a team approach to help individuals with physical or psychological problems that involve speech and language. Some speech therapists specialize in working with individuals of a particular age or people with a particular type of speech disorder. Speech therapists have a minimum of an undergraduate degree in speech and hearing science or in a type of communications disorder. They may work in private practice, hospitals and medical schools, and government agencies.

**Genetic Counselor**

Genetic counselors identify and counsel families at risk for genetic disorders. They work as members of a health care team, providing information and support to families who have members who have genetic defects or disorders or are at risk for a variety of inherited conditions. They also serve as educators and resource people for other health care professionals and the public. Almost one-half work in university medical centers; one-fourth work in private hospital settings.

Genetic counselors have specialized graduate degrees and experience in medical genetics and counseling. Most enter the field after majoring in undergraduate school in such disciplines as biology, genetics, psychology, nursing, public health, or social work. Read a profile of a genetic counselor on p. 65.

**Families/Relationships**

A number of careers and jobs related to lifespan development focus on working with families and relationship problems. These range from home health aide to marriage and family therapist.

**Home Health Aide**

A home health aide provides services to older adults in the older adults’ homes, helping them with basic self-care tasks. No higher education is required for this position. There is brief training by an agency.

**Child Welfare Worker**

Child protective services in each state employ child welfare workers. They protect children’s rights, evaluate any maltreatment, and may have children removed from their homes if necessary. A child social worker has a minimum of an undergraduate degree in social work.

**Child Life Specialist**

Child life specialists work with children and their families when the child needs to be hospitalized. They monitor the child’s activities, seek to reduce the child’s stress, and help the child to cope and to enjoy the hospital experience as much as possible. Child life specialists may provide parent education and develop individualized treatment plans based on an assessment of the child’s development, temperament, medical plan, and available social supports. Child life specialists have an undergraduate degree. They have taken courses in child development and education and usually completed additional courses in a child life program. Read a profile of a child life specialist on p. 282.

**Marriage and Family Therapist**

Marriage and family therapists work on the principle that many individuals who have psychological problems benefit when psychotherapy is provided in the context of a marital or family relationship. Marriage and family therapists may provide marital therapy, couple therapy to individuals in a relationship who are not married, and family therapy to two or more members of a family.

Marriage and family therapists have a master’s or a doctoral degree. They complete a training program in graduate school similar to a clinical psychologist’s but with the focus on marital and family relationships. In most states, it is necessary to go through a licensing procedure to practice marital and family therapy. Read the profile of a marriage and family therapist on p. 257.

**Further Careers**

These are only a handful of careers that knowledge of developmental psychology can prepare you for. Connecting With Careers highlights additional careers, including an infant assessment specialist (p. 162), child care director (p. 200), toy designer (p. 227), health psychologist (p. 404), college/career counselor (p. 418), parent counselor (p. 464), pastoral counselor (p. 496), association director (p. 584), and home hospice nurse (p. 627). What other careers can you think of that require a knowledge of human development?