Life-Span

Human Development

8e

Carol K. Sigelman and Elizabeth A. Rider

Sigelman

Life-Span Human Development, 8e

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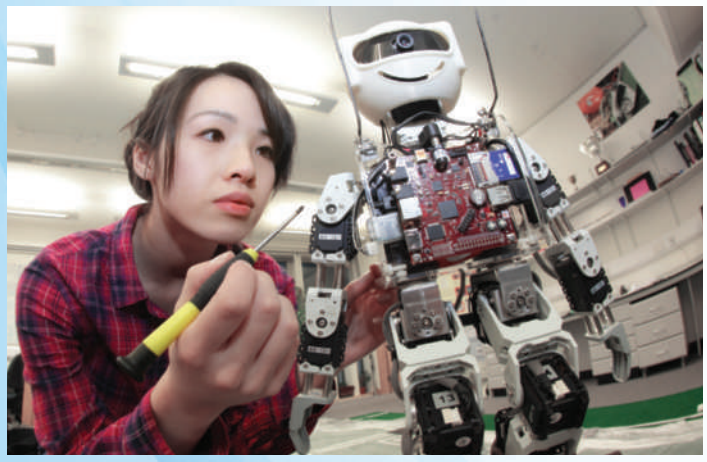

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Preface

This book is about the development of human beings—from their days as fertilized eggs to their dying days. It explores regularities as well as differences in development, and it asks fundamental questions about why we humans develop as we do. The field of life-span human development is a dynamic one, and we attempt to keep up with the change in this, the eighth edition of *Life-Span Human Development*.

This new edition incorporates many exciting changes, yet it retains four core features valued by students and instructors over the years: (1) our unique integrated topical–chronological approach, (2) a presentation that is both research-based and relevant to students, (3) an emphasis on ideas—on the different theoretical perspectives that guide thinking about human development and research—and (4) an in-depth exploration of the all-important nature–nurture issue. In addition, we introduce new topics and controversies in life-span human development, update coverage throughout, and offer new pedagogical features and supplements to enhance the teaching–learning process.

Topical and Chronological Approach

The most distinctive feature of this book is its unique integrated topical–chronological approach. Almost all other life-span development textbooks adopt a chronological or "age–stage" approach, carving the life span into age ranges and describing the prominent characteristics of individuals within each age range. In contrast, we adopt a topical approach for the overall organization of the book blended with a chronological approach within chapters. Each chapter focuses on a domain of development, such as physical growth, cognition, or personality, and traces developmental trends and influences in that domain from infancy to old age. At the same time, each chapter highlights the special qualities of different age groups through major sections on infancy, childhood, adolescence, and adulthood.

Why Topical?

Why have we fought the tide? Like many other instructors, we have typically favored topically organized textbooks when teaching child, adolescent, or adult development. As a result, it seemed natural to use that same topical approach in introducing students to the whole life span. It also bothered us that chronologically organized texts often have to repeat themselves to remind readers of where development left off in an earlier age period that was covered in a previous chapter.

More important, a topic-by-topic organization conveys the flow of development in each area—the systematic, and often dramatic, transformations we undergo as well as the ways in which we continue to be the same individuals. The topical approach also helps us emphasize the processes behind development. Finally, a predominantly topical approach does justice to a life-span perspective on development, allowing us to view each period of life in relation to what comes before and what comes after. In chronologically organized textbooks, many topics are described only in connection with the age group to which they seem most relevant—for example, attachment in relation to infancy, or sexuality in relation to adolescence and adulthood. A topical organization stimulates us to ask intriguing questions we might otherwise not ask, such as these about close relationships:

- What do infants' attachments to their parents have in common with, and how do they differ from, attachments between childhood friends or between adult romantic partners?
- Do securely attached infants later have a greater capacity to form and sustain close relationships than infants whose early social experiences are less favorable?
- What are the consequences at different points in the life span of lacking a close relationship?

Attachments are important throughout the life span, and a topical organization helps make that clear.

Why Chronological?

We also appreciate the strengths of the chronological approach, particularly its ability to portray the whole person in each period of the life span. For this reason, we integrated the age–stage approach with the topical organization, aiming to have the best of both worlds.

Each topical chapter contains major sections on infancy, childhood, adolescence, and adulthood. The existence of these sections is proof that the chapters consider development in each of the domains covered across the whole life span. These age–stage sections call attention to the distinctive qualities of each phase of life and make it easier for students to find material on an age period of particular interest to them. In short, we believe that our integrated topical–chronological approach allows students to understand the flow of life-span development in particular areas and the factors influencing it while also appreciating the flavor of each developmental period.

Adaptability of the Integrated Topical–Chronological Approach

Even though links among chapters are noted throughout the book, instructors who are teaching short courses or who are otherwise pressed for time can omit a chapter without fear of rendering other chapters incomprehensible. For example:

- A cognitively oriented course might omit one or more of the socially oriented chapters (Chapters 11, 12, and 14–17).

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- A socially oriented course might omit one or more of the cognitively oriented chapters (Chapters 6–10).

Moreover, this approach gives instructors the flexibility to cover infancy, childhood, and adolescence in the first portion of the course, if they prefer, and to save the material on adulthood for the end.

Research-Oriented and Relevant Coverage

We have worked hard to create a text that is rigorous yet readable—research-oriented yet "real" to students. The eighth edition of *Life-Span Human Development* tackles complex theoretical controversies and presents both classic and contemporary research from multiple disciplines. We aim to make developmental science accessible and relevant to students' lives and career goals but we refuse to "dumb it down."

Students need to understand how we know what we know about development—to appreciate the research process. With that in mind, we describe illustrative studies and present their data in graphs and tables, and we cite the authors and dates of publication for a large number of books and articles, all fully referenced in the bibliography at the end of the book. Some students may wonder why they are there. It is because we are committed to the value of systematic research, because we are bound to give credit where credit is due, and because we want students and their professors to have the resources they need to pursue their interests in human development during and after the course.

We also appreciate that solid scholarship is of little good to students unless they want to read it, can understand it, and see its relevance. To make the material more "real," we clarify developmental concepts through examples and analogies, connect topics in the text to topics in the news, and highlight the practical implications of research findings. We also incorporate applied material relevant to students' current and future roles as parents, teachers, psychologists, health professionals, and other human service professionals. And we help students see that major theories of human development do not just guide researchers but can guide them–for example, in raising, educating, or treating infants, children, or adolescents, understanding themselves and making important life decisions, appreciating that their parents and grandparents are also developing persons, and coping with challenges such as a death in the family.

Theoretical Grounding

Theories are critical in any science, telling scientists what to study, how to study it, and how to interpret their findings. We want students to leave the study of life-span human development with more than facts alone; we want them to appreciate the major issues of interest to developmental scientists and how the leading theories in the field have shaped our thinking about development. Most important, we want students to learn to use these theoretical perspectives to guide their thinking and action when they encounter a question about human development outside the course.

With this in mind, we have devoted Chapter 2 to laying out in broad strokes the psychoanalytic, learning, cognitive developmental, and systems perspectives on human development, showing what they say, where they stand on key developmental issues, and how they explain developmental phenomena. In later chapters, we delve deeper into these and other perspectives and show what they have to say about various aspects of development; see, for example, treatment of the dynamic systems view of motor development in Chapter 6; Jean Piaget's groundbreaking cognitive-developmental theory in comparison to Lev Vygotsky's sociocultural perspective and Kurt Fischer's dynamic skill theory in Chapter 7; the information-processing perspective in Chapter 8; alternative views of intelligence in Chapter 9; nativist, learning, and interactionist theories of language development in Chapter 10; alternative theories of personality development in Chapter 11; theories of gender role in chapter 12; theories of moral development in Chapter 13; attachment theory in Chapter 14; and family systems theory and contrasting models of influence in the family in Chapter 15.

Nature–Nurture Theme

Finally, we want students to gain a deeper understanding of the nature–nurture issue and of the many interacting forces affecting the developing person. We want students to appreciate that human development is an incredibly complex process that grows out of transactions between a changing person and a changing world and out of dynamic relationships among biological, psychological, and social influences. No contributor to development—a gene, a temperament, a parent, a culture—acts alone and is unaffected by other influences on development.

We introduce the nature–nurture issue in Chapter 1, compare theorists' stands on the issue in Chapter 2, and give the issue extended treatment in Chapter 3 on genes and environment. Each subsequent chapter includes one or more illustrations of the intertwined contributions of nature and nurture to normal development and aging, and Chapter 16 looks at their roles in the development of psychological disorders. Along the way, we describe exciting studies that compare individuals with and without particular genes and with and without particular life experiences to bring home what it means to say that genes and environment interact to influence development—as when genes predisposing an individual to depression combine with stressful life events to produce depression. We also illustrate the many ways in which genes and environment affect one another—for instance, ways in which genetic makeup influences the experiences an individual has, and ways in which experience influences which of an individual's genes are activated or expressed.

In this edition, we have expanded coverage not only of genes, hormones, brain functions, and other biological forces in development but also of ways in which race and ethnicity, social class, and the larger cultural context modify development. Most important, we illuminate the complex interrelationships between biological and environmental influences that are at the

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heart of the developmental process—and that make it difficult to leave this course as either an extreme nativist or an extreme environmentalist.

Organization of the Text

Core Concepts: Chapters 1 to 4

The book begins by orienting students to the life-span perspective on human development and to approaches to the scientific study of development (Chapter 1), as well as to the central issues and theoretical perspectives that have dominated the field (Chapter 2). It then explores developmental processes in some depth, examining genetic and environmental influences on development (Chapter 3) and then focusing on important environmental influences during the prenatal and perinatal periods (Chapter 4).

Development of Basic Human Capacities: Chapters 5 to 10

Chapters on the growth and aging of the body and nervous system and on health (Chapter 5) and on the development of sensory, perceptual, and motor capacities (Chapter 6) launch our examination of the development of basic human capacities. Chapter 7 turns to cognitive development, with emphasis on the influential theories of Jean Piaget and Lev Vygotsky; Chapter 8 views memory and problem solving from an information-processing perspective; Chapter 9 highlights the psychometric approach to cognition, exploring individual differences in intelligence and creativity; and Chapter 10 explores language development and the roles of language, cognition, and motivation in educational achievement.

Development of Self in Society: Chapters 11 to 17

The next three chapters concern the development of the self: changes in self-conceptions and personality and their relationships to vocational identity and development (Chapter 11); in gender roles and sexuality (Chapter 12); and in social cognition, morality, and prosocial and antisocial behavior (Chapter 13). The self is set more squarely in a social context as we trace life-span changes in attachment relationships (Chapter 14) and in roles and relationships within the family (Chapter 15). Finally, we offer a life-span perspective on developmental problems and disorders (Chapter 16) and examine how humans of different ages cope with dying and bereavement (Chapter 17).

Getting the Big Picture

To help students pull together the "big picture" of life-span human development at the end of the course, we remind students of some of the major themes of the book at the end of Chapter 17 and offer a chart inside the back cover that summarizes major developments in each of the seven periods of the life span. Finally, an appendix, Careers in Human Development, lays out possibilities for translating an interest in human development into a career in research, teaching, or professional practice.

Engaging Students

The eighth edition provides learning objectives for each major numbered section and continues to use a variety of other strategies to increase students' engagement with the material and, more importantly, their learning.

Learning Objectives

Each major numbered section starts with two to five learning objectives to focus students' reading and give it purpose.

Checking Mastery Questions

To encourage students to actively check their command of the material as they progress through the chapter, we posed two to four Checking Mastery questions at the end of each numbered chapter section, the answers to which are in an appendix in this book.

Making Connections Questions

Also at the end of each major section, Making Connections questions invite students to reflect on the material—to weigh in on a debate in the field, evaluate the material's implications for public policy, apply the material to a case example, or explore the material's relevance to their own development. Many of these questions can serve as the basis for writing assignments, essay questions, or class discussions.

Boxes

The topics we address in boxes sprinkled throughout the chapters were chosen because they struck us as both interesting and important; they are not fluff to be skipped! This edition continues to include three kinds of boxes, each with a different purpose:

- **Exploration boxes** allow more in-depth investigation of research on a topic (for example, characteristics of the baby boom and millennial generations, effects of early experience on gene expression, secrets to a long life, characteristics of aging drivers, normal versus abnormal memory problems in old age, language acquisition among deaf children, the importance of self-control over the life span, and cultural differences in the meaning of good parenting).
- **Application boxes** examine how knowledge has been applied to optimize development (for instance, to prevent unwanted teenage pregnancy, promote healthy babies, improve cognitive functioning, combat the effects of negative stereotypes of aging, stop bullying, strengthen relationships, prevent family violence, treat children with psychological disorders, and support bereaved families).

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- **Engagement boxes** provide opportunities for students to engage personally and actively with the material—to assess their own knowledge, beliefs, traits, and attitudes by completing personality scales, test items, surveys, and short quizzes (for example, by deciding where they stand on major issues in development, gauging their motivational style, completing a "Big Five" personality scale, determining their orientation toward romantic relationships, finding out if they might have characteristics associated with ADHD, or discovering whether they have experienced posttraumatic growth after a loss).

Content Updates in This Edition

As always, the book has been thoroughly updated to convey the most recent discoveries and insights developmentalists have to offer. We have added some exciting new topics and greatly revised, expanded, and updated coverage of other topics. A sampling:

Chapter 1. Understanding Life-Span Human Development

- Features all new research examples illustrating the use of case study, correlational, experimental, and cross-sectional as opposed to longitudinal approaches to study the implications of today's digital technologies for human development (for example, relationships between baby videos and infant language development, media use and adolescent development, and computer use and cognitive functioning in adulthood)

Chapter 2. Theories of Human Development

- New research on the nature and significance of observational learning across cultures
- Updates on application of major theories to explain school refusal in childhood and risky sexual behavior in adolescence
- Highlighting of Bronfenbrenner's bioecological theory to illustrate a systems perspective on development

Chapter 3. Genes, Environment, and Development

- Expanded coverage of exciting breakthroughs in the study of epigenetic effects–effects of early experience on gene expression and later development
- Bolstered discussion of how "genetically informed" studies can better establish that environmental influences such as good parenting truly affect development

Chapter 4. Prenatal Development and Birth

- New material on fetal programming and its implications for health over the life span

Chapter 5. Body, Brain, and Health

- Newly reorganized "Body, Brain, and Health" chapter.
- Greater emphasis on the development and aging of the brain, highlighting experience-guided growth in the prenatal period and infancy, the adolescent brain's role in adolescent risk taking, and the aging brain's compensation for decline
- Inclusion of theories of why we age and die and the nature-nurture issues they raise, including contributors to longevity among long-lived people
- More in-depth coverage of life-span health issues, especially of obesity as a major health concern

Chapter 6. Sensation, Perception, and Action

- Revised chapter now titled "Sensation, Perception, and Action" uses Gibson's ecological theory of perception to focus on synergistic relationships between perception and action.
- Material on motor development and the dynamic systems approach, formerly covered in Chapter 5, is now integrated in this chapter
- Coverage of vision in both infancy and adulthood has been significantly reorganized and updated

Chapter 7. Cognition

- Continues to cover the classic theories of Piaget and Vygotsky but adds Fischer's dynamic skill theory as a modern perspective that incorporates elements of both
- Introduces the concept of neuro-constructivism and brain research that fills holes in Piaget's explanation of cognitive development

Chapter 8. Memory and Information Processing

- Updated model of information processing reflecting current understandings of working memory
- A look at the neural bases of memory

Chapter 9. Intelligence and Creativity

- Expanded coverage of Sternberg's theory of successful intelligence
- Recent research on creativity, including the investment model of creativity

Chapter 10. Language and Education

- Integration of research on language into each of the age sections
- Research on the benefits of bilingualism

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- Revamped coverage of research on education to focus more on the learner's perspective
- A closer look at how the brain changes in response to experience with language and education

Chapter 11. Self and Personality

- Expanded illustrations of differences in personality and self-concept in individualistic versus collectivist societies, including cultural differences in toddler self-recognition
- Use of Holland's influential person-environment fit model in discussing vocational choice
- New section on unemployment and its impacts on development
- More on gender differences in career development

Chapter 12. Gender Roles and Sexuality

- The latest research on sexuality across the lifespan
- Updated coverage of gender differences in media and technology use
- Discussion of how (and why) gender roles have changed in recent decades
- More on the interplay of genetic and environmental factors as they affect sexual and gender development

Chapter 13. Social Cognition and Moral Development

- New focus on the issue of whether human nature is basically prosocial or antisocial
- Exciting research by Michael Tomasello and others on early prosocial behavior as well as research on infant antisocial behavior
- Box on Mischel's famous "marshmallow study" on delay of gratification and the significance of early self-control for later development
- Coverage of bullying and its prevention
- Exploration of the positive youth development movement

Chapter 14. Emotions, Attachment, and Social Relationships

- New section on emotional development across the life span, including research on early emotions, cultural display rules, emotion regulation in adolescence, and emotional well-being in old age
- More on adolescent peer relations and dating, with attention to the different meanings of popularity and the role of relational aggression in peer relationships
- New research on the adaptiveness of different attachment styles in later life.

Chapter 15. The Family

- New box on Amy Chua, the Chinese "Tiger Mother," and the role of cultural context in defining good parenting
- Updates on changes in the American family, including new figures showing trends
- Discussion of likely effects of the Great Recession of 2008 on family life
- Updates on fathers—both those who are more involved than ever and those who are missing in action
- More on cohabitation and why it does not predict a more successful marriage

Chapter 16. Developmental Psychopathology

- Changes in diagnosis of psychological disorders associated with DSM-5, the 2013 *Diagnostic and Statistical Manual of Mental Disorders*
- Inclusion of ADHD from a life-span perspective
- New research on how genes and female hormones, not just social pressures, may contribute to the rise in eating disorders among females at puberty
- Introduction of the issue of socialization versus selection in the study of peer influence (that is, whether peers truly influence adolescents' behavior or adolescents merely select peers whose behavior matches their own)
- New table on leading forms of dementia (neurocognitive disorders) and updates on this critical topic in aging

Chapter 17. The Final Challenge: Death and Dying

- New research on attitudes toward euthanasia and other end-of-life interventions
- Box on higher mental functioning in some individuals presumed to lack consciousness
- New research on adolescents whose parents have died
- The concept of posttraumatic growth
- New research on the benefits of palliative care

Chapter Organization

The chapters of this book use a consistent format and contain the following:

- A chapter outline that orients students to what lies ahead
- A chapter opener that engages student interest
- Introductory material that lays out the plan for the chapter and introduces key concepts, theories, and issues relevant to the area of development to be explored
- Learning objectives at the start of each major numbered section
- Developmental sections (in Chapters 5–17) that describe and explain key changes and continuities during four developmental periods: infancy, childhood, adolescence, and adulthood

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- Checking Mastery and Making Connections questions after each major section challenge students to test their understanding of the chapter material and to think about or apply it in new ways
- A Chapter Summary at the end of each chapter reviewing the chapter's main messages
- A Key Terms section listing new terms introduced in the chapter in the order in which they were introduced and with the page number on which they were introduced. These terms are printed in boldface, defined when they are first presented in a chapter, and included in the glossary at the end of the book

Supplements

The eighth edition of *Life-Span Human Development* is accompanied by a better array of supplements prepared for both the instructor and the student to create the best learning environment inside and outside the classroom. All the supplements have been thoroughly revised and updated. Especially noteworthy are the media and Internet-based supplements. We invite instructors and students to examine and take advantage of the teaching and learning tools available.

For the Instructor

Online Instructor's Manual with Test Bank. This manual contains chapter-specific outlines; a list of print, video, and online resources; and student learning objectives. The manual has a special emphasis on active learning with suggested student activities and projects for each chapter. The test bank, in computerized form, consists of approximately 135 multiple-choice, 20 true/false, 20 completion, and 10 essay questions for each chapter. Questions are marked with the correct answer, textbook section reference, and difficulty and are keyed to the Learning Objectives.
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For the Student

Internet-Based Supplements

MindTap for *Life-Span Human Development* puts everything you need for class in one, easy to navigate place. MindTap includes an integrated eBook, assignments, practice quizzes, videos, and more, all designed to help you be a more successful student. MindTap for *Life-Span Human Development* can be purchased at www.cengagebrain.com.

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Sigelman

Life-Span Human Development, 8e

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1 Understanding Life-Span Human Development

1.1 How Should We Think about Development?
- Defining Development
- Conceptualizing the Life Span
- Framing the Nature–Nurture Issue

1.2 What Is the Science of Life-Span Development?
- Goals and Uses of Studying Development
- Early Beginnings
- The Modern Life-Span Perspective

1.3 How Is Development Studied?
- The Scientific Method
- Sample Selection
- Data Collection
- The Case Study, Experimental, and Correlational Methods
- Developmental Research Designs

1.4 What Special Challenges Do Developmental Scientists Face?
- Conducting Culturally Sensitive Research
- Protecting the Rights of Research Participants

John Tatum thought he might be losing his edge, but he won three gold medals in swimming at the 2009 National Senior Games, competing for the first time in the 90–94 age group and avoiding head-to-head competition with his spry younger brother Brad, who snared five medals in the 85–89 age group (Hallett, 2009). They were among the 300,000 athletes age 50 and older who participate in the National Senior Games every 2 years—and yes, they were at it again in 2011, featured in a documentary film about the games.

John had always loved sports, starting when he and his brother had to teach themselves to swim in the Potomac River because city swimming pools were closed to blacks (Buerger, 2011). After retiring, he and his brother joined a senior swim team, swimming at least 2 hours three times a week, with workouts in between.

John grew up in Washington and remembers playing on the Lincoln Memorial just after it was built in 1922 (Parker, 2008). He attended segregated schools and served in an all-black regiment during World War II. He wanted to be a frogman (a combat diver or swimmer) but was told he could not because he was black, so he became a computer systems analyst with the Navy. He married in 1944 and had six children with his wife, Pearl. Pearl died of pancreatic cancer in 1978, but John has coped well with the challenge of caring for her and felt that he had done all he could (Parker, 2008). He suffered further blows when a daughter and a son both died of cancer in the early 1990s. He knows he's in excellent shape for a 90-year-old and he's determined to win: "None of this sappy 'for the team' stuff. We want medals, preferably gold ones" (Buerger, 2011, p. 19). But Brad recently had a bout with cancer, and John knows that he won't last forever either.

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Documentary Foundation

John Tatum, left, and his brother Brad at the National Senior Games.

This book is about the development of humans like John Tatum—and you—from conception to death. Like any life, the life of John Tatum raises questions: Was his extraordinary physical fitness at age 90 mainly a matter of good genes, or was it the result of a life of physical activity and hours in the pool? What changes in physical functioning and fitness does aging entail, and are they inevitable? Going in a different direction, how were John and others of his generation affected by growing up black in a society that openly discriminated against them? And what allows some people to cope better than others with negative life events such as the death of a spouse or child?

We address questions like these and more in this book. Among other things, we'll ask

- how infants perceive the world,
- how preschool children think,
- how life events such as divorce affect a child's adjustment and later romantic relationships,
- why some college students have more trouble than others deciding on a major,
- whether most adults experience a midlife crisis, and
- how people typically change physically, mentally, and emotionally as they age.

We will also take on even more fundamental questions: How in the world does a single fertilized egg cell turn into a unique human being like John Tatum? And how can we use knowledge of the genetic and environmental forces that shape development to optimize it?

Do any of these questions intrigue you? Probably so, because we are all developing persons interested in ourselves and the other developing people around us. Most college students want to understand how they and those they know have been affected by their experiences, how they have changed over the years, and where they may be headed. Many students also have practical motivations for learning about human development—for example, a desire to be a good parent or to pursue a career as a psychologist, nurse, teacher, or other human services professional.

This introductory chapter lays the groundwork for the remainder of the book by addressing some basic questions: How should we think about development and the influences on it? What is the science of life-span development? How is development studied? And what are some of the special challenges in studying human development?

1.1 How Should We Think about Development?

LEARNING OBJECTIVES:

- Define development, aging, and their relationship to each other.
- Explain and illustrate the role played by age grades, age norms, and the social clock in making human development different in different historical, cultural, and subcultural contexts.
- Summarize the extreme positions one can take on the "nature–nurture" issue and the position most developmental scientists today take.

We begin by asking what it means to say that humans "develop" or "age" over the life span, how we can conceptualize the life span, and how we can approach the single biggest issue in the study of development, the nature–nurture issue, and understand developing humans in their ever-changing environments.

Defining Development

Development can be defined as systematic changes and continuities in the individual that occur between conception and death, or from "womb to tomb." By describing developmental changes as systematic, we imply that they are orderly, patterned, and relatively enduring—not fleeting and unpredictable like mood swings. The changes can be gains, losses, or just differences from what we were like before. Development also involves continuities, ways in which we remain the same or continue to reflect our past selves.

The systematic changes and continuities of interest to students of human development fall into three broad domains:

1. *Physical development.* The growth of the body and its organs, the functioning of physiological systems including the brain, physical signs of aging, changes in motor abilities, and so on.

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2. *Cognitive development.* Changes and continuities in perception, language, learning, memory, problem solving, and other mental processes.
3. *Psychosocial development.* Changes and carryover in personal and interpersonal aspects of development, such as motives, emotions, personality traits, interpersonal skills and relationships, and roles played in the family and in the larger society.

Even though developmentalists often specialize in one of these three aspects of development, they appreciate that humans are whole beings and that changes in one area affect the others. The baby who develops the ability to crawl, for example, has new opportunities to develop her mind by exploring kitchen cabinets and to hone her social skills by trailing her parents from room to room. And for John Tatum, introduced at the start of the chapter, exercise through swimming may have sharpened his cognitive skills and enriched his social interactions.

How would you portray, as a line on a graph, typical changes from birth to old age? Many people picture tremendous positive gains in capacity from infancy to young adulthood, a flat line reflecting little change during early adulthood and middle age, and a steep decline of capacities in the later years. This stereotyped view of the life span is largely false, but it also has some truth in it, especially with respect to biological development. Traditionally, biologists have defined **growth** as the physical changes that occur from conception to maturity. We indeed become biologically mature and physically competent during the early part of the life span. **Biological aging** is the deterioration of organisms (including humans) that leads inevitably to their death. Biologically, then, development *does* involve growth in early life, stability in early and middle adulthood, and decline associated with now-accumulated effects of aging in later life.

Many aspects of development do not follow this "gain–stability–loss" model, however. Modern developmental scientists have come to appreciate that developmental change at any age involves both gains and losses. For example, although children gain many cognitive abilities as they get older, they also lose self-esteem and become more prone to **depression** (Gotlib & Hammen, 2002; Robins et al., 2002). Nor should we associate aging only with loss: Adults aged 60 and older score higher on vocabulary tests than adults aged 18–30 (Verhaeghen, 2003); some cognitive abilities and types of knowledge and expertise hold steady or even grow during adulthood (Ackerman, 2008; Alexander, Murphy, & Kulikowich, 2009). At age 68, gerontologist Margaret Cruikshank (2009) conveyed the positives of aging this way: "Decline is thought to be the main theme of aging, and yet for many old age is a time of ripening, of becoming most ourselves" (p. 207).

In addition, people do not always improve or worsen but instead just become different than they were (as when a child who once feared loud noises comes to fear hairy monsters under the bed instead). Development clearly means more than positive growth during infancy, childhood, and adolescence. And **aging,** as developmental scientists define it, involves more than biological aging (Ryff & Singer, 2009); it refers to a range of physical, cognitive, and psychosocial changes, *positive and negative*, in the mature organism (Overton, 2010). In short, development involves gains, losses, neutral changes, and continuities in each phase of the life span, growth and aging are part of it.

Conceptualizing the Life Span

If you were to divide the human life span into periods, how would you do it?

• **Table 1.1** lists the periods that many of today's developmentalists regard as distinct. You will want to keep them in mind as you read this book, because we will constantly be speaking of infants, preschoolers, school-age children, adolescents, emerging adults, and young, middle-aged, and older adults. Note, however, that the given ages are approximate. Age is only a rough indicator of developmental status. Improvements in standards of living and health, for example, have meant that today's 65-year-olds are not as "old" physically, cognitively, or psychosocially as 65-year-olds a few decades ago were. There are also huge differences in functioning and personality among individuals of the same age; while some adults are bedridden at age 90, others like John Tatum are out swimming laps.

The most recent addition to this list of periods of the life span—the one you may not have heard of—is **emerging adulthood,** a transitional period between adolescence and full-fledged adulthood that extends from about age 18 to age 25 (maybe as late as 29). After World War II, it started taking youth longer to get to adulthood and its roles and responsibilities than it had in earlier eras as more adolescents began to attend college in large numbers to prepare for work and to postpone marriage and

• **Table 1.1** An Overview of Periods of the Life Span

Period of Life	Age Range
Prenatal period	Conception to birth
Infancy	First 2 years of life (the first month is the neonatal or newborn period)
Preschool period	2–5 or 6 years (some prefer to describe as *toddlers* children who have begun to walk and are age 1–3)
Middle childhood	6 to about 10 (or until the onset of puberty)
Adolescence	Approximately 10–18 (or from puberty to when the individual becomes relatively independent)
Emerging adulthood	18–25 or even later (transitional period between adolescence and adulthood)
Early adulthood	25–40 years (adult roles are established)
Middle adulthood	40–65 years
Late adulthood	65 years and older (some break out subcategories such as the young-old, old-old, and very old based on differences in functioning)

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Ariel Skelley/Age Fotostock

What periods of the life span do these four females, representing four generations of the same family, fall in? What periods of the life span do you distinguish?

parenthood in the process (Furstenberg et al., 2004; Keniston, 1970). As a result, psychologist Jeffrey Arnett and others began to describe emerging adulthood as a distinct phase of the life span, in developed countries anyway, in which youth must spend years getting educated and accumulating wealth in order to make it as adults (Arnett, 2000, 2011; Arnett & Tanner, 2006; Tanner, Arnett, & Leis, 2009). According to Arnett, emerging adults (maybe you?):

- explore their identities;
- lead unstable lives filled with job changes, new relationships, and moves;
- are self-focused, relatively free of obligations to others, and therefore free to focus on their own psychological needs;
- feel in between—adultlike in some ways but not others; and
- believe they have limitless possibilities ahead (Arnett, 2000; Arnett & Tanner, 2006).

Not everyone agrees that emerging adulthood is a truly distinct period of development (Epstein, 2013), but it is clear that adolescents in modern societies are taking longer and longer to become adults. Do you view yourself as an adult? Why or why not? Sociologist Frank Furstenberg and his colleagues (2004) looked at five traditional, objective markers of adulthood: completing an education, being financially independent, leaving home, marrying, and having children. In 1960, 65% of men and 77% of women had achieved these milestones by age 30. By 2000, only 31% of 30-year-old men and 46% of 30-year-old women in the United States had achieved them.

Cultural Differences

Table 1.1 represents only one view of the periods of the life span. Age—like gender, race, and other significant human characteristics—means different things in different societies (Fry, 2009). Each society has its own ways of dividing the life span and of treating the people in different age groups. Each socially defined age group in a society—called an **age grade** or age stratum—is assigned different statuses, roles, privileges, and responsibilities. Separating children into grades in school based on age is one form of age grading. Just as high schools have "elite" seniors and "lowly" freshmen, whole societies are layered into age grades.

Our society, for example, grants "adults" (18-year-olds by law in the United States) a voting privilege not granted to children. Legal definitions of the boundary between adolescence and adulthood vary, though. In most states in the United States, the legal age for marrying is lower than the legal age for voting or serving in the military, and the right to drink alcohol is granted last, commonly at age 21 (Settersten, 2005). Similarly, although we seem to define age 65 as the boundary between middle age and old age, in fact the ages at which people become eligible for Medicare, Social Security benefits, and "senior discounts" at restaurants and stores differ—and may change over time.

We define old age as age 65 or older, but the !Kung San of Botswana often don't know people's chronological ages and define old age instead in terms of functioning (Rosenberg, 2009). They distinguish between the *na* or "old" (an honorary title meaning big and great granted to all older people starting at around age 50); the "old/dead" (older but still able to function); and the "old to the point of helplessness," who are ailing and need care. The St. Lawrence Eskimo simply distinguish between boys and men (or between girls and women), whereas the Arusha people of East Africa devised six socially meaningful age grades for males: youths, junior warriors, senior warriors, junior elders, senior elders, and retired elders (Keith, 1985). In certain other cultures, the recognized periods of the life span include a period before birth and an afterlife, or the life span may be pictured as a circle that includes reincarnation or some other way of being "recycled" and born again (Fry, 1985; Kojima, 2003).

Cultures differ not only in the age grades they recognize but in how they mark the transition from one age grade to another (Fry, 2009). A **rite of passage** is a ritual that marks a person's "passage" from one status to another, usually in reference to the transition from childhood to adulthood. Rites of passage can involve such varied practices as body painting, circumcision, instruction by elders in adult sexual practices, tests of physical prowess, and gala celebrations (see Kottak, 2009). As the photo on the next page illustrates, Japan's rite of passage for 20-year-olds makes clear to all that they are now adults.

In the West, Jewish youth experience a clear rite of passage when they have their *bar* or *bat mitzvahs*, and 15-year-old Hispanic American girls in some communities participate in a *quinceañera* (meaning "fifteen years ceremony") to signify that they have become women. Unfortunately, one of the clearest rites of passage for adolescents in our society is a night of binge drinking at age 21. In one study, four of five college students reported that they drank on their 21st birthday to celebrate—12% of them an extremely dangerous 21 drinks (Rutledge, Park, & Sher, 2008). Perhaps because we lack a clear, society-wide rite of passage like Japan's, adolescents in our society end up less sure than adolescents in many other societies when they are adults.

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Each January 15 in Japan, 20-year-olds are officially pronounced adults in a national celebration and enter a new age grade. Young women receive kimonos, young men receive suits, and all are reminded of their responsibilities to society. Young adults also gain the right to drink, smoke, and vote. The modern ceremony grew out of an ancient one in which young samurai became recognized as warriors (Reid, 1993). The age-grading system in Japanese culture clearly marks the beginning of adulthood with this rite of passage.

Once a society has established age grades, it defines what people should and should not do at different points in the life span (Elder & Shanahan, 2006). According to pioneering gerontologist Bernice Neugarten and her colleagues (Neugarten, Moore, & Lowe, 1965), these expectations, or **age norms**, are society's way of telling people how to act their age. In our culture, for example, most people agree that 6-year-olds are too young to date or drink beer but are old enough to attend school. We also tend to agree that adults should think about marrying around age 25 (although in some segments of society earlier or later is better) and should retire around age 65 (Neugarten, Moore, & Lowe, 1965; Settersten, 1998). In less industrialized countries, age norms often call for having children in one's teens and stopping work earlier than 65 in response to illness and disability (Shanahan, 2000).

Why are age norms important? First, they influence people's decisions about how to lead their lives. They are the basis for what Neugarten (1968) called the **social clock**—a person's sense of when things should be done and when he or she is ahead of or behind the schedule dictated by age norms. Prompted by the social clock, for example, an unmarried 30-year-old may feel that he should propose to his girlfriend before she gives up on him, or a 70-year-old who loves her job may feel she should start planning for retirement. Second, age norms affect how easily people adjust to life transitions. Normal life events such as having children typically tend to affect us more negatively when they occur "off time" than when they occur "on time," at socially appropriate ages (McLanahan & Sorensen, 1985). It can be challenging to experience puberty at either age 8 or age 18 or to become a new parent at 13 or 45. However, as Neugarten could see even in the 1960s, age norms in our society have been weakening for some time. It's less clear now what one should be doing at what age and so people do things like marry and retire at a wide range of ages (Settersten & Trauten, 2009). Witness Madonna adopting a child at 50 and Elton John becoming a first-time father at 62 (Mayer, 2011).

Subcultural Differences

Age grades, age norms, and social clocks differ not only from **culture** to culture but also from subculture to subculture. Our own society is diverse with respect to race and **ethnicity,** or people's classification or affiliation with a group based on common heritage or traditions; and **socioeconomic status (SES)**, or standing in society based on such indicators as occupational prestige, education, and income. African American, Hispanic American, Native American, Asian American, and European American individuals, and individuals of high and low SES, sometimes have quite different developmental experiences. Within these broad groups, of course, there are immense variations associated with a host of other factors. We must be careful not to overgeneralize.

Age norms tend to be different in higher-SES and lower-SES communities, and individuals from lower-income families tend to reach milestones of adulthood such as starting work, marrying, and having children earlier (Elder & Shanahan, 2006; Mollborn, 2009). When sociologist Linda Burton (1990, 1996) studied a low-SES African American community, she found it was common for young women to become mothers at about age 16—earlier than in most middle-class communities, white or black. Teenage mothers in this community looked to their own mothers and grandmothers to help them care for their children. Meanwhile, children were asked to grow up fast; they often tended younger siblings and helped their mothers with household tasks (Burton, 2007). Although age norms in middle-class communities in the United States call for postponing parenthood (Mollborn, 2009), it is not at all unusual in cultures around the world for females to become mothers in their teens and for grandmothers and older children to help them with child care responsibilities (Ochs & Izquierdo, 2009; Rogoff, 2003).

Perhaps the most important message about subcultural differences in development is that, regardless of race and ethnicity, poverty can be damaging to human development. In 2010, 15% of the U. S. population—but 22% of its children—lived below the poverty line, then $22,314 for a family of four (Macartney, 2011). Closer to one out of three African American and Hispanic American children are poor. Parents and children living in poverty experience more stress than higher-SES parents and children owing to noise, crowding, family disruption, hunger, exposure to violence, and other factors (Evans & Kim, 2012; Heymann, Penrose, & Earle, 2006; Huston & Bentley, 2010). And on average, although there are many exceptions, parents coping with poverty tend to provide less stable, stimulating, and supportive home environments than wealthier parents do (Bornstein & Bradley, 2003; and see Chapter 15). As a result, the developmental experiences and trajectories of children who grow up in poverty and children who grow up in affluence are significantly

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different. The damaging effects of poverty show themselves in lower academic achievement, poorer mental health and well-being, and even poorer physical health many years later (Aber, Morris, & Raver, 2012; Conger & Donnellan, 2007; Evans & Kim, 2012).

Historical Changes

The nature and meanings of periods of the life span also change from one historical period to another. In Europe and North America, they have changed along these lines:

- *Childhood*. Not until the 17th century in Western cultures did children come to be viewed as distinctly different from adults, as innocents to be protected and nurtured. In medieval Europe (A.D. 500–1500), for example, 6-year-olds were dressed in miniature versions of adult clothing, treated to some extent as "miniature adults" (Ariès, 1962), and expected to contribute to the family's survival as soon as possible (Cunningham, 1996; Hanawalt, 2003).

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Although medieval children were pressured to abandon their childish ways as soon as possible and were dressed like miniature adults, it is doubtful that they were really viewed as miniature adults. Still, the modern concept of children as innocents to be nurtured and protected did not begin to take hold until the 17th century.

- *Adolescence*. Not until the late 19th century and early 20th century was **adolescence**—the transitional period between childhood and adulthood that begins with puberty and involves significant physical, cognitive, and psychosocial changes—recognized as a distinct phase of the life span (Hine, 1999; Kett, 1977). As industrialization advanced, an educated labor force was needed, so laws were passed restricting child labor, making schooling compulsory, and separating youths attending school from the adult world (Furstenberg, 2000).
- *Emerging adulthood*. As you saw earlier, the transition period from childhood to adulthood has become so long in modern societies that a new period of the life span, *emerging adulthood*, has been defined in the late 20th and early 21st centuries.
- *Middle age*. Not until the 20th century did our society begin to define a period of middle age in which the nest is emptied of children. This distinct life phase emerged as 20th-century parents began to bear fewer children and live long enough to see their children grow up and leave home (Moen & Wethington, 1999). Sometimes characterized as a time of "crisis," sometimes as a time of hardly any change, middle age is now understood to be a time of good health, peak cognitive functioning, stable relationships, many responsibilities, and high satisfaction for most people (Whitbourne & Willis, 2006).
- *Old age*. Not until the 20th century did our society come to define old age as a period of retirement. There were not many old people in early eras, and they were not as healthy as old people today. Those who did survive to old age literally worked until they dropped. Starting in the last half of the 20th century, thanks to Social Security, pensions, Medicare, and other support programs, working adults began to retire in their 60s with many years ahead of them (Schulz & Binstock, 2006).

What will the life span look like in the future? In the early 21st century, the average **life expectancy** for a newborn in the United States—the average number of years a newborn who is born now can be expected to live—is 78 years, compared with 47 years in 1900 (National Center for Health Statistics, 2011). Life expectancy is 81 for a white female, 77 for a black female, 76 for a white male, and 70 for a black male. Overall, more and more people are reaching older and older ages in better health and with fewer disabilities (Kinsella, 2009; Satariano, 2006).

By 2030, when most members of the baby boom generation will have retired, adults 65 and older will represent not the 13% of the U.S. population they represent today but more like 20% (Satariano, 2006). As a result, an increasingly large group of elderly people will depend on a smaller generation of younger, working adults to support them (Wilmoth & Longino, 2006). Although these elders will be healthier, wealthier, and better educated than the generations that preceded them, they will also need a lot of services—and health and mental health professionals trained in aging to serve them—as more of them reach very old ages (Schaie, 2011; Schulz & Binstock, 2006; Treas & Hill, 2009). How will policy makers address these issues? Conflict between the generations over resources and resentful attitudes toward aging adults could become problems (North & Fiske, 2012).

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Today's older adults are healthier, wealthier, and more educated than older adults of previous generations. However, as more of them reach advanced ages, they will need more services from people trained in gerontology and geriatrics.

This "graying of America," and indeed of the world's population, along with societal changes we cannot yet anticipate, will make the aging experience by the end of the 21st century different than it is today.

In sum, age—whether it is 7, 17, or 70—has had different meanings in different historical eras and most likely will mean something different in the 21st century than it did in the 20th. The broader message is clear: *We must view development in its historical, cultural, and subcultural context*. We must bear in mind that each social group settles on its own definitions of the life span, the age grades within it, and the age norms appropriate to each age range, and that each social group experiences development differently. We must also appreciate that in Western cultures it was only in the 17th century that children came to be seen as innocents; in the late 19th century that adolescence emerged as a distinct phase; and in the 20th century that our society recognized emerging adulthood, a middle-aged "empty nest" period, and an old age characterized by retirement. One of the most fascinating challenges in the study of human development is to understand which aspects of development are universal and which differ across social and historical contexts—and why (Norenzayan & Heine, 2005; Shweder et al., 2006).

Framing the Nature–Nurture Issue

Understanding human development means grappling with *the* major issue in the study of human development—the **nature–nurture issue,** or the question of how biological forces and environmental forces act and interact to make us what we are (see Goldhaber, 2012). We raised a nature–nurture question at the start of the chapter by asking whether 90-year-old John Tatum's swimming prowess was mainly attributable to good genes or good training, and we will highlight this central and always fascinating issue throughout this book.

Nature

On the nature side of the debate are those who emphasize the influence of heredity, universal maturational processes guided by the genes, biologically based or innate predispositions produced by evolution, and biological influences such as hormones and neurotransmitters. To those who emphasize nature, some aspects of development are inborn or innate, others are the product of **maturation**, the biological unfolding of the individual according to a blueprint contained in the **genes** (the hereditary material passed from parents to child at conception). Just as seeds turn into mature plants through a predictable process, humans "unfold" within the womb (assuming that they receive the necessary nourishment from their environment). Their genetic blueprint then makes it likely that they will walk and utter their first words at about 1 year of age, achieve sexual maturity between 12 and 14, and gray in their 40s and 50s. Maturational changes in the brain contribute to cognitive changes such as increased memory and problem-solving skills and to psychosocial changes such as increased understanding of other people's feelings. Genetically influenced maturational processes guide all of us through many of the same developmental changes at about the same points in our lives. Meanwhile, *individual* hereditary endowment is making each person's development unique.

Nurture

On the nurture side of the nature–nurture debate are those who emphasize change in response to **environment**—all the external physical and social conditions, stimuli, and events that can affect us, from crowded living quarters and polluted air, to social interactions with family members, peers, and teachers, to the neighborhood and broader cultural context in which we develop. We know that the physical environment matters—for example, that exposure to lead in the paint in old buildings can stunt children's intellectual development or that living near a noisy airport can interfere with their progress in learning to read (Evans, 2006). And we will see countless examples in this book of how the social environment—the behavior of other people—shapes development. Rather than seeing biological maturation as the process driving development, those on the nurture side of the nature–nurture debate emphasize **learning**—the process through which experience brings about relatively permanent changes in thoughts, feelings, or behavior. A certain degree of maturation is clearly necessary before a child can dribble a basketball, but careful instruction and long, hard hours of practice are just as clearly required if the child is to excel in basketball.

Nature plus Nurture

If nature is important in development, we would expect all children to have basically similar inborn capacities and to achieve similar developmental milestones at similar times because of maturation, and we would expect differences among individuals to be largely caused by differences in their genetic makeup. If nurture is important in development, we would generally expect human development to take a variety of pathways depending on each individual's life experiences. (See • **Table 1.2** for the terms of the nature–nurture debate.)

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