

ROBERT S. FELDMAN

# DEVELOPMENT ACROSS THE LIFE SPAN

9TH EDITION



# Development Across the Life Span

**Ninth Edition**

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# Preface

This book tells a story: the story of our lives, and our parents' lives, and the lives of our children. It is the story of human beings and how they get to be the way they are.

Unlike any other area of study, lifespan development speaks to us in a very personal sense. It covers the range of human existence from its beginnings at conception to its inevitable ending at death. It is a discipline that deals with ideas and concepts and theories, but one that above all has at its heart people—our fathers and mothers, our friends and acquaintances, our very selves.

*Development Across the Life Span* seeks to capture the discipline in a way that sparks, nurtures, and shapes readers' interest. It is meant to excite students about the field, draw them into its way of looking at the world, and build their understanding of developmental issues. By exposing readers to both the current content and the promise inherent in lifespan development, the text is designed to keep interest in the discipline alive long after students' formal study of the field has ended.

## Overview of the Ninth Edition

*Development Across the Life Span*, Ninth Edition—like its predecessors—provides a broad overview of the field of human development. It covers the entire range of the human life, from the moment of conception through death. The text furnishes a broad, comprehensive introduction to the field, covering basic theories and research findings as well as highlighting current applications outside the laboratory. It covers the life span chronologically, encompassing the prenatal period, infancy and toddlerhood, the preschool years, middle childhood, adolescence, early and middle adulthood, and late adulthood. Within these periods, it focuses on physical, cognitive, and social and personality development.

The book seeks to accomplish the following four major goals:

- First and foremost, the book is designed to provide a broad, balanced overview of the field of lifespan development. It introduces readers to the theories, research, and applications that constitute the discipline, examining both the traditional areas of the field and more recent innovations. It pays particular attention to the applications developed by lifespan development specialists, demonstrating how lifespan developmentalists use theory, research, and applications to help solve significant social problems.
  - The second goal of the text is to explicitly tie development to students' lives. Findings from the study of lifespan development have a significant degree of relevance to students, and this text illustrates how these findings can be applied in a meaningful, practical sense. Applications are presented in a contemporaneous framework, including current news items, timely world events, and contemporary uses of lifespan development that draw readers into the field. Numerous descriptive scenarios and vignettes reflect everyday situations in people's lives, explaining how they relate to the field.
  - The third goal is to highlight both the commonalities and the diversities of today's multicultural society. Consequently, the book incorporates material relevant to diversity in all its forms—racial, ethnic, gender, sexual orientation, religion, and cultural—throughout every chapter. In addition, every chapter has at least one *Developmental Diversity and Your Life* box. These features explicitly consider how cultural factors relevant to development both unite and diversify our contemporary global society.
  - Finally, the fourth goal is one that is implicit in the other three: making the field of lifespan development engaging, accessible, and interesting to students. Lifespan development is a joy both to study and to teach because so much of it has direct, immediate meaning to our lives. Because all of us are involved in our own developmental paths, we are tied in very personal ways to the content areas covered by the book. *Development Across the Life Span*, then, is meant to engage and nurture this interest, planting a seed that will develop and flourish throughout readers' lifetimes.
- In accomplishing these goals, the book strives to be user friendly. Written in a direct, conversational voice, it duplicates as much as possible a dialogue between author and student. The text is meant to be understood and mastered on its own by students of every level of interest and motivation. To that end, it includes a variety of pedagogical features that promote mastery of the material and encourage critical thinking.
- In short, the book blends and integrates theory, research, and applications, focusing on the breadth of human development. Furthermore, rather than attempting to provide a detailed historical record of the field, it focuses on the here and now, drawing on the past where appropriate, but with a view toward delineating the field as it now stands and the



directions toward which it is evolving. Similarly, while providing descriptions of classic studies, the emphasis is more on current research findings and trends.

*Development Across the Life Span* is meant to be a book that readers will want to keep in their own personal libraries, one that they will take off the shelf when considering problems related to that most intriguing of questions: How do people come to be the way they are?

## Special Features

- **Chapter-Opening Prologues.** Each chapter begins with a short vignette, describing an individual or a situation that is relevant to the basic developmental issues being discussed in the chapter.
- **Looking Ahead Sections.** These opening sections orient readers to the topics to be covered, bridging the opening prologue with the remainder of the chapter.
- **Learning Objectives.** Each major section includes explicit learning objectives. These numbered learning objectives provide a means for instructors to evaluate student mastery of specific content. They also anchor the module reviews and chapter summary.
- **From Research to Practice.** Each chapter includes a section that describes current developmental research applied to everyday problems, helping students to see the impact of developmental research throughout society. Many are new in this edition. Each *From Research to Practice* box concludes with a Shared Writing prompt, which students can respond to, as well as respond to peers' responses, and instructors can moderate.
- **Developmental Diversity and Your Life.** Every chapter has at least one *Developmental Diversity and Your Life* section incorporated into the text. These sections highlight issues relevant to today's multicultural society.
- **Running Glossary.** Key terms are defined in the margins of the page on which the term is presented.
- **Development in Your Life.** Every chapter includes information on specific uses that can be derived from research conducted by developmental investigators. These boxes, formerly titled *Are You an Informed Consumer of Development?*, are now titled *Development and Your Life*.
- **Review and Journal Prompt Sections.** Interspersed throughout each chapter are three module reviews—short recaps of the chapter's main points keyed to learning objectives—as well as Journal Prompts designed to elicit critical thinking about the subject matter through written responses.
- **End-of-Chapter Material.** Each chapter ends with a summary and an epilogue that refers back to the opening prologue and that ties the chapter together. The

Looking Back summary is keyed to the chapter's learning objectives.

- **Career Prompts.** Students will encounter frequent questions throughout the text designed to show the applicability of the material to a variety of professions, including those in the education, nursing, social work, and health care sectors.
- **Putting It All Together.** In end-of-part integrative concept maps, a short vignette is presented, and students are asked to consider the vignette from both their point of view and the points of view of parents, educators, health care workers, social workers, and so on.

## What's New in the Ninth Edition?

The revision includes a number of significant changes and additions.

One figure in each chapter now includes a *Thinking About the Data* prompt, which encourages the reader to think about what is behind the data they see in graphs and tables. This critical thinking question in the figure caption is a jumping-off point to a data-driven Social Explorer activity in Revel.

Furthermore, almost all *From Research to Practice* boxes—which describe a contemporary developmental research topic and its applied implications—are new to this edition. Boxes formerly called *Are You an Informed Consumer of Development* are now titled *Development in Your Life*.

In addition, module reviews are now tied to learning objectives to help students organize section reviewing around the objectives.

Finally, the ninth edition of *Development Across the Life Span* incorporates a significant amount of new and updated information. For instance, advances in such areas as behavioral genetics, brain development, evolutionary perspectives, and cross-cultural approaches to development receive expanded and new coverage. Dozens of figures and photos have been revised or replaced, and hundreds of new citations have been added, with most of those from articles and books published in the last few years.

New topics were added to every chapter. The following sample of new and revised topics featured in this edition provides a good indication of the currency of the revision:

### Chapter 1, Introduction to Lifespan Development

- Revised prologue on in vitro fertilization
- Additional material on Vygotsky and scaffolding
- Revised material on culture, ethnicity, and race, including two new *Developmental Diversity and Your Life* boxes:
  - “How Culture, Ethnicity, and Race Influence Development” discusses cultural, ethnic, racial, socioeconomic, and gender considerations in the study of development.

- “Choosing Research Participants Who Represent the Diversity of Humanity” emphasizes the importance of truly representing the general population when studying development.
- Table 1-1, Approaches to Lifespan Development, now includes sex and gender topics in the questions asked by development researchers
- Refined explanation of critical period
- Figure 1-1 on brain differences in a person with autism
- Refined explanation of cognitive neuroscience approaches
- Updated Figure 1-6 on longitudinal vs. cross-sectional research
- Figure 1-13 on the scientific method
- Using lifespan development research for public policy

### Chapter 2, The Start of Life: Prenatal Development

- Prologue on genetic testing
- *From Research to Practice* box on transgenerational epigenetic inheritance
- Updated Table 2-1 on the genetic basis of various disorders
- Updated Table 2-3 on DNA-based genetic tests
- Cultural and religious concerns about reproductive technologies
- Abortion statistics
- Cross-cultural differences in abortion
- Statistics on percentage of women facing physical abuse during pregnancy
- Smoking as the single most preventable cause of death of infants and mothers
- Rate of twins by geographical region
- Miscarriage aftermaths
- Opioid use during pregnancy
- Revised art in Figures 2-3, 2-4, 2-6

### Chapter 3, Birth and the Newborn Infant

- Prologue on premature infants
- *From Research to Practice* box on pre- and postpartum depression effects on child
- *Developmental Diversity and Your Life* box on the cultural differences in perception of pain of childbirth
- Statistics on length of hospital stay
- Statistics on survival rates for very preterm babies
- Figure 3-2 on cross-country comparison of length of hospital stay following delivery

- Figure 3-3 on international rates of infant mortality
- Figure 3-5 on rates of cesarean deliveries worldwide
- Figure 3-6 on rates of infant mortality in the United States by race
- Statistics on epidural use
- Revised Table 3-3 on childbirth-related parental leave policies

### Chapter 4, Physical Development in Infancy

- Prologue on early first steps
- *From Research to Practice* box on SIDS prevention
- Cardboard box as the best place for an infant to sleep
- Statistics on shaken baby syndrome, with new Figure 4-5 showing damage to the brain of a shaken baby
- Introduction of SUID, along with the discussion of SIDS
- Figure 4-7 on reduction in instances of SIDS and SUID
- Benefits of co-sleeping
- Clarification of timing of breastfeeding and introduction of solid foods
- Causes of cultural differences in sleep patterns in infants
- Figure 4-9, world hunger map
- Updated terminology uses “intellectual disability” in place of “mental retardation”
- Abilities to distinguish rhythms of languages prenatally
- Brain plasticity in infancy

### Chapter 5, Cognitive Development in Infancy

- Prologue on early language use
- *Developmental Diversity and Your Life* box on infants’ first words
- *From Research to Practice* box on efficacy of accelerating infants’ cognitive development
- Infant attention and representational competence related to later intelligence
- Babbling following the prelinguistic stage of cooing
- Infants’ use of general cognitive abilities underlying development of language competence
- Brain growth and infantile amnesia
- Change in key term from scheme to schema
- Memory and hippocampus
- Supplemented description of the learning theory approach to language development

## Chapter 6, Social and Personality Development in Infancy

- Prologue on observational learning in infants
- *From Research to Practice* box on evidence for racial prejudice in infants
- Motor neurons and goal-directed behavior
- Updated statistics on poverty and race
- Updated statistics on unwed mothers
- Update on parental demographics
- More on choosing an appropriate daycare situation
- *Developmental Diversity and Your Life* box on brain lateralization
- Figure 6-6 on child care choices
- Infants' understanding of morality
- Data on child care delivery modalities
- Mirror-and-rouge technique
- Clarified and expanded explanation of mirror neurons

## Chapter 7, Physical and Cognitive Development in the Preschool Years

- Prologue on active toddler
- *From Research to Practice* box on the value of writing words by hand
- *Developmental Diversity and Your Life* box on brain lateralization, gender, and culture
- Figure 7-6 showing myelin development over time
- Revised growth charts
- Media and children, including:
  - Statistics on media use: Figure 7-14
  - Learning objective on media use
  - The influence of *Sesame Street*
  - Recommendations on media use by the American Academy of Pediatrics
  - New content on reducing media exposure prior to bedtime to help sleep
- Statistics on perceived health of children
- Just-right phenomenon in nutrition
- Weight, including:
  - Distinction between overweight and obese
  - Introduction of key term: BMI
  - Statistics on obesity
- Clarified distinction between syntax and grammar
- Distinction between Vygotsky and Piaget, including a new Table 7-1 comparing their theories
- Effects of lead poisoning, including the lead poisoning that occurred in Flint, Michigan

- New data on child abuse and neglect
- Additional signs of child abuse
- Change blindness

## Chapter 8, Social and Personality Development in the Preschool Years

- Prologue on sibling personality differences
- *From Research to Practice* box on play and brain development
- More on development of socioeconomic awareness
- Trans-racial families
- Value of rough-and-tumble play on brain development
- Transgender preschoolers
- Hispanic parental values
- Warning signs of sexual abuse

## Chapter 9, Physical and Cognitive Development in Middle Childhood

- Prologue on cognitive development and math
- *From Research to Practice* box on the value of counting with fingers in learning math
- *Developmental Diversity and Your Life* box, "The Impact of Culture on Growth"
- Causes of racial differences in asthma rates
- Online safety
- Updated statistics on prevalence of obesity, including new Figure 9-2
- Figure 9-10 on languages spoken at home
- Accomplishments of profoundly gifted children
- Auditory processing disorder
- Dyscalculia
- Dysgraphia
- Nonverbal learning disabilities
- Long-term treatment effects for ADHD
- Updated definition of obesity
- Clarified definition of specific learning disorders
- Increase over time of prevalence in psychological disorders
- Incidence of psychological disorders in children
- Clarified definition of bilingualism

## Chapter 10, Social and Personality Development in Middle Childhood

- Prologue on bullied child
- *From Research to Practice* box on children of gay, lesbian, and transsexual parents
- Increase in multigenerational families

- Social intelligence curricula
- Self-esteem and social media use
- Relaxation of the one-child policy in China
- *Developmental Diversity and Your Life* box on Asians and the “model minority” stereotype
- Children and number of parents, including a new Figure 10-4 on two-parent and single-parent families
- New statistics and Figure 10-5 on children in foster care
- Update on the U.S. Supreme Court ruling on same-sex marriage
- Categories of bullying
- Upward social comparison
- Self-care drawbacks

### Chapter 11, Physical and Cognitive Development in Adolescence

- Prologue on body image
- New recommendations on HPV vaccine
- *Developmental Diversity and Your Life* box on academic disidentification and stereotype threat
- Figure 11-4 on physical activity among adolescent females
- Figure 11-5 on pruning of gray matter
- Learning objective on use of social media
- Figure 11-8 on social media use by adolescents
- Social media use and social competence
- Benefits of social media use
- Grade inflation
- *From Research to Practice* box on vaping and dripping
- Brain effects of binge drinking
- Opioid epidemic
- Marijuana use
- STIs among adolescents
- Statistics on incidence of AIDS

### Chapter 12, Social and Personality Development in Adolescence

- Prologue on a teen inventor
- *From Research to Practice* box on sexting and social media
- Updated Figure 12-8 on age at which adolescents have sex for the first time
- Transgender individuals
- Supreme Court legalizing same-sex marriage
- Updated statistics and Figure 12-9 on teenage pregnancy rates
- Clarified description of Marcia’s theory

- Suicide attempts in adolescents
- Differential rates of suicide in gays, lesbians, and transsexuals
- Native American suicide rates
- Suicide lifeline chat information
- Benefits of cross-race friendships
- New statistics on violent deaths in adolescence
- Online dating, flirting, and sexting
- Adolescent anxiety disorders
- Emerging adulthood

### Chapter 13, Physical and Cognitive Development in Early Adulthood

- Prologue on college enrollment
- Figure 13-3 on obesity rates in early adulthood (United States)
- Figure 13-4 on obesity rates worldwide
- Revised Figure 13-6 on Schaie’s stages
- Relationship between age and creativity
- *From Research to Practice* box on cognitive benefits of diversity
- Statistics on gender gap in college attendance
- Explanations for the high rate of dropping out of college
- Figure 13-9 on college attendance rates, by race
- Figure 13-10, income disparity between those with and without a college degree
- Figure 13-11 on mental illness in college students
- How psychological disorders are viewed cross-culturally

### Chapter 14, Social and Personality Development in Early Adulthood

- Prologue on gay couple
- *From Research to Practice* box on the relationship between having children and being happy
- More on emerging adulthood
- Updated fertility data
- Figure 14-2, marriage choice funnel
- Updated divorce statistics
- Use of LinkedIn and Monster.com by job seekers
- Millennial generation and work
- Figure 14-10 on women’s earnings as a proportion of men’s earnings
- Figure 14-11 on job participation by gender
- Figure 14-12, occupational prestige—perceptions by age

### Chapter 15, Physical and Cognitive Development in Middle Adulthood

- Prologue on middle-age runner
- Figure 15-3, Reported Frequency of Sexual Intercourse (by age)
- *From Research to Practice* box on mammogram guidelines
- *Developmental Diversity and Your Life* box on the experience of menopause symptoms across cultures
- Figure 15-5 on life expectancy and income
- Updated statistics on life expectancy for upper and lower 1 percent of income level
- Figure 15-7 on deaths worldwide from cardiovascular disease

### Chapter 16, Social and Personality Development in Middle Adulthood

- Prologue on career changes
- *From Research to Practice* box on personality changes in adulthood
- Updates to causes of divorce
- Figure 16-4 on divorce rate for adults 50 and older
- Figure 16-5 on remarriage rates
- Multigenerational families
- How to avoid career burnout
- Table 16-2 on professions prone to burnout
- Figure 16-10 on women's participation in workforce
- Figure 16-11 on rates of immigration into the United States

### Chapter 17, Physical and Cognitive Development in Late Adulthood

- Prologue on inventor
- *From Research to Practice* box on cognitive skills training in late adulthood
- Figure 17-1 on growing size of the late adulthood population
- Figure 17-4 on metabolism in older adults vs. younger adults
- Figure 17-5, data on vehicular crashes involving older adults vs. teens
- Lengthening telomeres
- New drug therapies for extending life
- Figure 17-10 on world's growing centenarian population
- Figure 17-15 on technology adoption in late adulthood

### Chapter 18, Social and Personality Development in Late Adulthood

- Prologue on coupling in late adulthood
- *From Research to Practice* box on retirement approaches

- Socioemotional selectivity theory
- Figure 18-2 on poverty in late adulthood
- Figure 18-4 on living arrangements in late adulthood
- Figure 18-6 on perceived benefits of growing older

### Chapter 19, Death and Dying

- Prologue on a good death
- *From Research to Practice* box on grief after spouse death
- Professional mourners in China
- Displays of grief in Egypt
- Additional ways of helping children deal with grief
- New statistics on assisted suicides and jurisdictions
- Treatment of dying across cultures
- Updated statistics on infant mortality in the United States and other countries
- Figure 19-4 on predictions of life span versus reality

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*Robert S. Feldman*  
*University of Massachusetts Amherst*



# About the Author



**R**obert S. Feldman is Professor of Psychological and Brain Sciences and Senior Advisor to the Chancellor at the University of Massachusetts Amherst. A recipient of the College Distinguished Teacher Award, he teaches psychology classes ranging in size from 10 to nearly 500 students. During the course of more than three decades as a college instructor, he has taught both undergraduate and graduate courses at Mount Holyoke College, Wesleyan University, and Virginia Commonwealth University in addition to the University of Massachusetts.

Professor Feldman, who initiated the Minority Mentoring Program at the University of Massachusetts, also has served as a Hewlett Teaching Fellow and Senior Online Teaching Fellow. He initiated distance learning courses in psychology at the University of Massachusetts.

A Fellow of the American Psychological Association, the Association for Psychological Science, and the American

Association for the Advancement of Science, Professor Feldman received a B.A. with High Honors from Wesleyan University (from which he received the Distinguished Alumni Award). He has an M.S. and a Ph.D. from the University of Wisconsin-Madison. He is a winner of a Fulbright Senior Research Scholar and Lecturer award, and he has written more than 100 books, book chapters, and scientific articles. He has edited *Development of Nonverbal Behavior in Children* (Springer-Verlag) and *Applications of Nonverbal Behavioral Theory and Research* (Erlbaum), and co-edited *Fundamentals of Nonverbal Behavior* (Cambridge University Press). He is also author of *Child Development, Understanding Psychology*, and *P.O.W.E.R. Learning: Strategies for Success in College and Life*. His books have been translated into many languages, including Spanish, French, Portuguese, Dutch, Chinese, Korean, German, Arabic, and Japanese. His research interests include honesty and deception in everyday life, work that he described in *The Liar in Your Life*, a trade book published in 2009. His research has been supported by grants from the National Institute of Mental Health and the National Institute on Disabilities and Rehabilitation Research.

Professor Feldman is past president of the Federation of Associations of Behavioral and Brain Sciences Foundation, a consortium of societies that benefit the social sciences. In addition, he is on the board of New England Public Radio. Professor Feldman loves music, is an enthusiastic pianist, and enjoys cooking and traveling. He has three children and four grandchildren, and he and his wife, a psychologist, live in western Massachusetts in a home overlooking the Holyoke Mountain Range.

# Development Across the Life Span

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## Chapter 1

# An Introduction to Lifespan Development



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## Learning Objectives

- LO 1.1** Define the field of lifespan development and describe what it encompasses.
- LO 1.2** Describe the areas that lifespan development specialists cover.
- LO 1.3** Describe some of the basic influences on human development.
- LO 1.4** Summarize four key issues in the field of lifespan development.
- LO 1.5** Describe how the psychodynamic perspective explains lifespan development.
- LO 1.6** Describe how the behavioral perspective explains lifespan development.
- LO 1.7** Describe how the cognitive perspective explains lifespan development.
- LO 1.8** Describe how the humanistic perspective explains lifespan development.
- LO 1.9** Describe how the contextual perspective explains lifespan development.
- LO 1.10** Describe how the evolutionary perspective explains lifespan development.
- LO 1.11** Discuss the value of applying multiple perspectives to lifespan development.
- LO 1.12** Describe the role that theories and hypotheses play in the study of development.
- LO 1.13** Compare the two major categories of lifespan development research.

**LO 1.14** Identify different types of correlational studies and their relationship to cause and effect.

**LO 1.15** Explain the main features of an experiment.

**LO 1.16** Distinguish between theoretical research and applied research.

**LO 1.17** Compare longitudinal research, cross-sectional research, and sequential research.

**LO 1.18** Describe some ethical issues that affect psychological research.

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## Chapter Overview

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### An Orientation to Lifespan Development

Defining Lifespan Development

The Scope of the Field of Lifespan Development

Influences on Development

Key Issues and Questions: Determining the Nature—and Nurture—of Lifespan Development

### Theoretical Perspectives on Lifespan Development

The Psychodynamic Perspective: Focusing on the Inner Person

The Behavioral Perspective: Focusing on Observable Behavior

The Cognitive Perspective: Examining the Roots of Understanding

The Humanistic Perspective: Concentrating on the Unique Qualities of Human Beings

The Contextual Perspective: Taking a Broad Approach to Development

Evolutionary Perspectives: Our Ancestors' Contributions to Behavior

Why “Which Approach Is Right?” Is the Wrong Question

### Research Methods

Theories and Hypotheses: Posing Developmental Questions

Choosing a Research Strategy: Answering Questions

Correlational Studies

Experiments: Determining Cause and Effect

Theoretical and Applied Research: Complementary Approaches

Measuring Developmental Change

Ethics and Research

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## Prologue: New Conceptions

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In many ways, the first meeting of Louise Brown and Elizabeth Carr was unremarkable: just two women, one in her thirties, the other in her forties, chatting about their lives and their own children.

But in another sense the meeting was extraordinary. Louise Brown was the world's first “test-tube baby,” born by *in vitro fertilization (IVF)*, a procedure in which fertilization of a mother's egg by a father's sperm takes place outside of the mother's body. And Elizabeth Carr was the first baby born by IVF in the United States.

Louise was a preschooler when her parents told her how she was conceived, and throughout her childhood she was bombarded with questions. It became routine to explain to her classmates that she, in fact, was not born in a laboratory. At times, she felt completely alone. For Elizabeth, too, growing up was not easy, as she experienced bouts of insecurity.

Today, however, Louise and Elizabeth are hardly unique. They are among the more than 5 million babies that have been born using the procedure, one that has almost become routine. And both became mothers themselves, giving birth to babies who were conceived, incidentally, the old-fashioned way (Falco, 2012; Gagneux, 2016; Simpson, 2017).

## Looking Ahead

Louise Brown's and Elizabeth Carr's conceptions may have been novel, but their development, from infancy onward, has followed predictable patterns. While the specifics of our own development vary—some of us encounter economic deprivation or live in war-torn territories; others contend with family issues like divorce and stepparents—the broad strokes of the development that is set in motion the moment we are conceived are

remarkably similar for all of us. Like LeBron James, Bill Gates, and, yes, Louise Brown and Elizabeth Carr, each and every one of us has traversed the territory known as child development.

IVF is just one of the brave new worlds of the 21st century. Issues ranging from cloning and the consequences of poverty on development to the effects of culture and race raise significant developmental concerns. Underlying these are even more fundamental issues. How do children develop physically? How does their understanding of the world grow and change over time? And how do our personalities and our social world develop as we move from birth through adolescence?

Each of these questions, and many others we'll encounter throughout this book, are central to the field of lifespan development. As a field, lifespan development encompasses not only a broad span of time—from before birth to death—but also a wide range of areas of development. Consider, for example, the range of interests that different specialists in lifespan development focus on when considering the lives of Louise Brown and Elizabeth Carr:

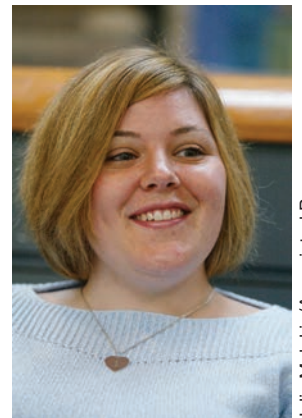
- Lifespan development researchers who investigate behavior at the level of biological processes might determine if Louise and Elizabeth's functioning prior to birth was affected by their conception outside the womb.
- Specialists in lifespan development who study genetics might examine how the genetic endowment from their parents has affected their later behavior.
- For lifespan development specialists who investigate the ways thinking changes over the course of life, their lives might be examined in terms of how each woman's understanding of the nature of her conception changed as she grew older.
- Researchers in lifespan development who focus on physical growth might consider whether their growth rates differed from children conceived more traditionally.
- Lifespan development experts who specialize in the social world and social relationships might look at the ways that Louise and Elizabeth interacted with others and the kinds of friendships they developed.

Although their interests take many forms, these specialists in lifespan development share one concern: understanding the growth and change that occur during the course of life. Taking many differing approaches, developmentalists study how both the biological inheritance from our parents and the environment in which we live jointly affect our behavior.

Some developmentalists focus on explaining how our genetic background can determine not only how we look but also how we behave and relate to others in a consistent manner—that is, matters of personality. They explore ways to identify how much of our potential as human beings is provided—or limited—by heredity. Other lifespan development specialists look to the environment, exploring ways in which our lives are shaped by the world that we encounter. They investigate the extent to which we are shaped by our early environments, and how our current circumstances influence our behavior in both subtle and obvious ways.

Whether they focus on heredity or environment, all developmental specialists acknowledge that neither heredity nor environment alone can account for the full range of human development and change. Instead, our understanding of people's development requires that we look at the interaction of heredity and environment, attempting to grasp how both, in the end, contribute to human behavior.

In this chapter, we orient ourselves to the field of lifespan development. We begin with a discussion of the scope of the discipline, illustrating the wide array of topics it covers and the full range of ages, from conception to death, that it examines. We also survey the



Louise Brown (at left) and Elizabeth Carr (right), who were both born by in vitro fertilization.

AP Images/Alamy Stock Photo

Julie Malakie/Associated Press

key issues and controversies of the field and consider the broad perspectives that developmentalists take. Finally, we discuss the ways developmentalists use research to ask and answer questions.

## An Orientation to Lifespan Development

Have you ever wondered how it is possible that an infant tightly grips your finger with tiny, perfectly formed hands? Or marveled at the way an adolescent can make involved decisions about whom to invite to a party? Or wondered what it is that makes a grandfather at 80 so similar to the father he was when he was 40?

If you've ever contemplated such things, you are asking the kinds of questions that scientists in the field of *lifespan development* pose. In this section, we'll examine how the field of lifespan development is defined, the scope of the field, as well as some basic influences on human development.

### Defining Lifespan Development

**LO 1.1** Define the field of lifespan development and describe what it encompasses.

**Lifespan development** is the field of study that examines patterns of growth, change, and stability in behavior that occur throughout the entire life span. Although the definition of the field seems straightforward, the simplicity is somewhat misleading. In order to understand what development is actually about, we need to look underneath the various parts of the definition.

In its study of growth, change, and stability, lifespan development takes a *scientific* approach. Like members of other scientific disciplines, researchers in lifespan development test their assumptions about the nature and course of human development by applying scientific methods. As we'll see later in the chapter, they develop theories about development, and they use methodical, scientific techniques to validate the accuracy of their assumptions systematically.

Lifespan development focuses on *human* development. Although there are developmentalists who study the course of development in nonhuman species, the vast majority examine growth and change in people. Some seek to understand universal principles of development, whereas others focus on how cultural, racial, and ethnic differences affect the course of development. Still others aim to understand the unique aspects of individuals, looking at the traits and characteristics that differentiate one person from another. Regardless of approach, however, all developmentalists view development as a continuing process throughout the life span.

As developmental specialists focus on the ways people change and grow during their lives, they also consider stability in people's lives. They ask in which areas, and in what periods, people show change and growth, and when and how their behavior reveals consistency and continuity with prior behavior.

Finally, developmentalists assume that the process of development persists throughout every part of people's lives, beginning with the moment of conception and continuing until death. Developmental specialists assume that in some ways people continue to grow and change right up to the end of their lives, while in other respects their behavior remains stable. At the same time, developmentalists believe that no particular, single period of life governs all development. Instead, they believe that every period of life contains the potential for both growth and decline in

#### lifespan development

the field of study that examines patterns of growth, change, and stability in behavior that occur throughout the entire life span



How people grow and change over the course of their lives is the focus of lifespan development.

abilities and that individuals maintain the capacity for substantial growth and change throughout their lives.

## The Scope of the Field of Lifespan Development

### LO 1.2 Describe the areas that lifespan development specialists cover.

Clearly, the definition of lifespan development is broad, and the scope of the field is extensive. Consequently, lifespan development specialists cover several quite diverse areas, and a typical developmentalist will choose to specialize in both a topical area and an age range.

**TOPICAL AREAS IN LIFESPAN DEVELOPMENT.** Some developmentalists focus on **physical development**, examining the ways in which the body's makeup—the brain, nervous system, muscles, and senses, and the need for food, drink, and sleep—helps determine behavior. For example, one specialist in physical development might examine the effects of malnutrition on the pace of growth in children, while another might look at how athletes' physical performance declines during adulthood (Fell & Williams, 2008; Muiños & Ballesteros, 2014).

Other developmental specialists examine **cognitive development**, seeking to understand how growth and change in intellectual capabilities influence a person's behavior. Cognitive developmentalists examine learning, memory, problem-solving skills, and intelligence. For example, specialists in cognitive development might want to see how problem-solving skills change over the course of life, or whether cultural differences exist in the way people explain their academic successes and failures (Dumka et al., 2009; Penido et al., 2012; Coates, 2016).

Finally, some developmental specialists focus on personality and social development. **Personality development** is the study of stability and change in the enduring characteristics that differentiate one person from another over the life span. **Social development** is the way in which individuals' interactions with others and their social relationships grow, change, and remain stable over the course of life. A developmentalist interested in personality development might ask whether there are stable, enduring personality traits throughout the life span, whereas a specialist in social development might examine the effects of racism or poverty or divorce on development (Lansford, 2009; Tine, 2014; Manning et al., 2017). These four major topic areas—physical, cognitive, social, and personality development—are summarized in Table 1-1.

**AGE RANGES AND INDIVIDUAL DIFFERENCES.** In addition to choosing to specialize in a particular topical area, developmentalists also typically look at a particular age range. The life span is usually divided into broad age ranges: the prenatal period (the period from conception to birth), infancy and toddlerhood (birth to age 3), the preschool period (ages 3 to 6), middle childhood (ages 6 to 12), adolescence (ages 12 to 20), young adulthood (ages 20 to 40), middle adulthood (ages 40 to 65), and late adulthood (age 65 to death).

It's important to keep in mind that these broad periods—which are largely accepted by lifespan developmentalists—are social constructions. A *social construction* is a shared notion of reality, one that is widely accepted but is a function of society and culture at a given time. Consequently, the age ranges within a period—and even the periods themselves—are in many ways arbitrary and are often culturally derived. For example, later in the book we'll discuss how the concept of childhood as a separate period did not even exist during the 17th century; at that time, children and adults were seen as little different from one another except in terms of size. Furthermore, while some periods have a clear-cut boundary (infancy begins with birth, the preschool period ends with entry into elementary school, and adolescence starts with sexual maturity), others don't.

For instance, consider the period of young adulthood, which at least in Western cultures is typically assumed to begin at age 20. That age, however, is notable only because

#### physical development

development involving the body's physical makeup, including the brain, nervous system, muscles, and senses, and the need for food, drink, and sleep

#### cognitive development

development involving the ways that growth and change in intellectual capabilities influence a person's behavior

#### personality development

development involving the ways that the enduring characteristics that differentiate one person from another change over the life span

#### social development

the way in which individuals' interactions with others and their social relationships grow, change, and remain stable over the course of life



**Table 1-1** Approaches to Lifespan Development

Orientation	Defining Characteristics	Examples of Question Asked*
Physical development	Emphasizes how the brain, nervous system, muscles, sensory capabilities, and needs for food, drink, and sleep affect behavior	<ul style="list-style-type: none"> <li>• What determines the sex of a child? (2)</li> <li>• What are the long-term results of premature birth? (3)</li> <li>• What are the benefits of breast milk? (4)</li> <li>• What are the consequences of early or late sexual maturation? (11)</li> <li>• What leads to obesity in adulthood? (13)</li> <li>• How do adults cope with stress? (15)</li> <li>• What are the outward and internal signs of aging? (17)</li> <li>• How do we define death? (19)</li> </ul>
Cognitive development	Emphasizes intellectual abilities, including learning, memory, problem solving, and intelligence	<ul style="list-style-type: none"> <li>• What are the earliest memories that can be recalled from infancy? (5)</li> <li>• What are the intellectual consequences of watching television? (7)</li> <li>• Do spatial reasoning skills relate to music practice? (7)</li> <li>• Are there benefits to bilingualism? (9)</li> <li>• How does an adolescent's egocentrism affect his or her view of the world? (11)</li> <li>• Are there ethnic and racial differences in intelligence? (9)</li> <li>• How does creativity relate to intelligence? (13)</li> <li>• Does intelligence decline in late adulthood? (17)</li> </ul>
Personality and social development	Emphasizes enduring characteristics that differentiate one person from another, and how interactions with others and social relationships grow and change over the life span	<ul style="list-style-type: none"> <li>• Do newborns respond differently to their mothers than to others? (3)</li> <li>• What is the best procedure for disciplining children? (8)</li> <li>• When does a sense of gender identity develop, and how do sex and gender provide a context for development? (8)</li> <li>• How can we promote cross-race friendships? (10)</li> <li>• What are the causes of adolescent suicide? (12)</li> <li>• How do we choose a romantic partner? (14)</li> <li>• Do the effects of parental divorce last into old age? (18)</li> <li>• Do people withdraw from others in late adulthood? (18)</li> <li>• What are the emotions involved in confronting death? (19)</li> </ul>

\*Numbers in parentheses indicate in which chapter the question is addressed.

it marks the end of the teenage period. In fact, for many people, such as those enrolled in higher education, the age change from 19 to 20 has little special significance, coming as it does in the middle of the college years. For them, more substantial changes may occur when they leave college and enter the workforce, which is more likely to happen around age 22. Furthermore, in some non-Western cultures, adulthood may be considered to start much earlier, when children whose educational opportunities are limited begin full-time work.

In fact, some developmentalists have proposed entirely new developmental periods. For instance, psychologist Jeffrey Arnett argues that adolescence extends into *emerging adulthood*, a period beginning in the late teenage years and continuing into the mid-twenties. During emerging adulthood, people are no longer adolescents, but they haven't fully taken on the responsibilities of adulthood. Instead, they are still trying out different identities and engaging in self-focused exploration (de Dios, 2012; Sumner, Burrow, & Hill, 2015; Arnett, 2011, 2016).

In short, there are substantial *individual differences* in the timing of events in people's lives. In part, this is a biological fact of life: People mature at different rates and reach developmental milestones at different points. However, environmental factors also play a significant role in determining the age at which a particular event is likely to occur. For example, the typical age of marriage varies substantially from one culture to another, depending in part on the functions that marriage plays in a given culture.

It is important to keep in mind, then, that when developmental specialists discuss age ranges, they are talking about averages—the times when people, on average, reach particular milestones. Some people will reach the milestone earlier, some later, and many will reach it around the time of the average. Such variation becomes noteworthy only when children show substantial deviation from the average. For example, parents whose child begins to speak at a much later age than average might decide to have their son or daughter evaluated by a speech therapist.

**THE LINKS BETWEEN TOPICS AND AGES.** Each of the broad topical areas of lifespan development—physical, cognitive, social, and personality development—plays a role



This wedding of two children in India is an example of how environmental factors can play a significant role in determining the age when a particular event is likely to occur.

throughout the life span. Consequently, some developmental experts focus on physical development during the prenatal period, and others during adolescence. Some might specialize in social development during the preschool years, while others look at social relationships in late adulthood. Still others might take a broader approach, looking at cognitive development through every period of life.

In this book, we'll take a comprehensive approach, proceeding chronologically from the prenatal period through late adulthood and death. Within each period, we'll look at different topical areas: physical, cognitive, social, and personality development. Furthermore, we'll also be considering the impact of culture on development, as we discuss next.

## Influences on Development

### LO 1.3 Describe some of the basic influences on human development.

Bob, born in 1947, is a baby boomer; he was born soon after the end of World War II (1939–1945), when an enormous surge in the birth rate occurred as soldiers returned to the United States from overseas. He was an adolescent at the height of the civil rights movement and the beginning of protests against the Vietnam War. His mother, Leah, was born in 1922; still alive at 96, she is part of the generation that passed its childhood and teenage years in the shadow of the Great Depression. Bob's son, Jon, was born in 1975. Now established in a career after graduating from college and starting his own family, he is a member of what has been called Generation X. Jon's younger sister, Sarah, who was born in 1982, is part of the next generation, which sociologists have called the Millennial Generation. She now is raising a preschooler of her own after finishing graduate school and starting her career. She sees post-Millennials, the generation that followed her, as being engrossed in social media and their iPhones.

These people are, in part, products of the social times in which they live. Each belongs to a particular **cohort**, a group of people born at around the same time in the same place. Such major social events as wars, economic upturns and depressions, famines, and epidemics (like the one due to the AIDS virus) work similar influences on members of a particular cohort (Dittmann, 2005; Twenge, Gentile, & Campbell, 2015).

**cohort**

a group of people born at around the same time in the same place

*Cohort effects* provide an example of *history-graded influences*, which are biological and environmental influences associated with a particular historical moment. For instance, people who lived in New York City during the 9/11 terrorist attack on the World Trade Center experienced shared biological and environmental challenges due to the attack. Their development is going to be affected by this normative history-graded event (Laugharne, Janca, & Widiger, 2007; Park, Riley, & Snyder, 2012; Kim, Bushway, & Tsao, 2016).

In contrast, *age-graded influences* are biological and environmental influences that are similar for individuals in a particular age group, regardless of when or where they are raised. For example, biological events such as puberty and menopause are universal events that occur at relatively the same time throughout all societies. Similarly, a sociocultural event such as entry into formal education can be considered an age-graded influence because it occurs in most cultures around age 6.

#### From an educator's perspective

How would a student's cohort membership affect his or her readiness for school? For example, what would be the benefits and drawbacks of coming from a cohort in which Internet use was routine, compared with earlier cohorts prior to the appearance of the Internet?

Development is also affected by *sociocultural-graded influences*, the social and cultural factors present at a particular time for a particular individual, depending on such variables as ethnicity, social class, and subcultural membership. For example, sociocultural-graded influences will be considerably different for children who are white and affluent than for children who are members of a minority group and living in poverty (Rose et al., 2003).

## Developmental Diversity and Your Life

### How Culture, Ethnicity, and Race Influence Development

*In the United States, parents praise young children who ask a lot of questions for being “intelligent” and “inquisitive.” The Dutch consider such children “too dependent on others.” Italian parents judge inquisitiveness as a sign of social and emotional competence, not intelligence. Spanish parents praise character far more than intelligence, and Swedes value security and happiness above all.*

What are we to make of the diverse parental expectations cited above? Is one way of looking at children’s inquisitiveness right and the others wrong? Probably not, if we take into consideration the cultural contexts in which parents operate. In fact, different cultures and subcultures have their own views of appropriate and inappropriate methods and interpretations of childrearing, just as they have different developmental goals for children (Feldman & Masalha, 2007; Huijbregts et al., 2009; Chen, Chen & Zhen, 2012).

Specialists in child development must take into consideration broad cultural factors. For example, as we’ll discuss further in Chapter 8, children growing up in Asian societies tend to have a *collectivistic orientation*, focusing on the interdependence among members of society. In contrast, children in Western societies are more likely to have an *individualistic orientation*, in which they concentrate on the uniqueness of the individual.

Similarly, child developmentalists must also consider ethnic, racial, socioeconomic, and gender differences if they are to achieve an understanding of how people change and grow throughout the life span. If these specialists succeed in doing so, not only can they attain a better understanding of human development, but they may also be able to derive more precise applications for improving the human social condition. To complicate the study of diverse populations, the terms *race* and *ethnic group* are often used inappropriately. *Race* originated as a biological concept, and initially referred to classifications based on physical and structural characteristics

of species. But such a definition has little validity in terms of humans, and research shows that it is not a meaningful way to differentiate people.

For example, depending on how race is defined, there are between 3 and 300 races, and no race is genetically distinct. The fact that 99.9 percent of genetic makeup is identical in all humans makes the question of race seem insignificant. Thus, race today is generally thought of as a *social construction*, something defined by people and their beliefs (Helms, Jernigan, & Mascher, 2005; Smedley & Smedley, 2005; Alfred & Chlup, 2010).

In contrast, *ethnic group* and *ethnicity* are broader terms for which there is greater agreement. They relate to cultural background, nationality, religion, and language. Members of ethnic groups share a common cultural background and group history.

In addition, there is little agreement about which names best reflect different races and ethnic groups. Should the term *African American*—which has geographical and cultural implications—be preferred over *black*, which focuses primarily on race and skin color? Is *Native American* preferable to *Indian*? Is *Hispanic* more appropriate than *Latino*? And how can researchers accurately categorize people with multiracial backgrounds?

In order to fully understand development, then, we need to take the complex issues associated with human diversity into account. It is only by looking for similarities and differences among various ethnic, cultural, and racial groups that developmental researchers can distinguish principles of development that are universal from principles that are culturally determined. In the years ahead, then, it is likely that lifespan development will move from a discipline that focuses primarily on North American and European development to one that encompasses development around the globe (Matsumoto & Yoo, 2006; Kloep et al., 2009).

Finally, *non-normative life events* are specific, atypical events that occur in a person’s life at a time when such events do not happen to most people. For example, a child whose parents die in an automobile accident when she is 6 years old has experienced a significant non-normative life event.

### Key Issues and Questions: Determining the Nature—and Nurture—of Lifespan Development

#### **LO 1.4** Summarize four key issues in the field of lifespan development.

Today, several key issues and questions dominate the field. Among the major issues (summarized in Table 1-2) are the nature of change, the importance of critical and sensitive periods, lifespan approaches versus more focused approaches, and the nature–nurture issue.

**Table 1-2** Major Issues in Lifespan Development

<b>Continuous Change</b>	<b>Discontinuous Change</b>
<ul style="list-style-type: none"> <li>• Change is gradual.</li> <li>• Achievements at one level build on previous levels.</li> <li>• Underlying developmental processes remain the same over the life span.</li> </ul>	<ul style="list-style-type: none"> <li>• Change occurs in distinct steps or stages.</li> <li>• Behavior and processes are qualitatively different at different stages.</li> </ul>
<b>Critical Periods</b>	<b>Sensitive Periods</b>
<ul style="list-style-type: none"> <li>• Certain environmental stimuli are necessary for normal development.</li> <li>• Emphasized by early developmentalists.</li> </ul>	<ul style="list-style-type: none"> <li>• People are susceptible to certain environmental stimuli, but consequences of absent stimuli are reversible.</li> <li>• Current emphasis in lifespan development.</li> </ul>
<b>Lifespan Approach</b>	<b>Focus on Particular Periods</b>
<ul style="list-style-type: none"> <li>• Current theories emphasize growth and change throughout life; relatedness of different periods.</li> </ul>	<ul style="list-style-type: none"> <li>• Infancy and adolescence are emphasized by early developmentalists as most important periods.</li> </ul>
<b>Nature (Genetic Factors)</b>	<b>Nurture (Environmental Factors)</b>
<ul style="list-style-type: none"> <li>• Emphasis is on discovering inherited genetic traits and abilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Emphasis is on environmental influences that affect a person's development.</li> </ul>

Most developmentalists agree that taking an either/or position on the continuous-discontinuous issue is inappropriate. While many types of developmental change are continuous, others are clearly discontinuous.

**CONTINUOUS CHANGE VERSUS DISCONTINUOUS CHANGE.** One of the primary issues challenging developmentalists is whether development proceeds in a continuous or discontinuous fashion. In **continuous change**, development is gradual, with achievements at one level building on those of previous levels. Continuous change is quantitative in nature; the basic underlying developmental processes that drive change remain the same over the course of the life span. Continuous change, then, produces changes that are a matter of degree, not of kind. Changes in height prior to adulthood, for example, are continuous. Similarly, as we'll see later in the chapter, some theorists suggest that changes in people's thinking capabilities are also continuous, showing gradual quantitative improvements rather than developing entirely new cognitive processing capabilities.

In contrast, one can view development as being made up of primarily **discontinuous change**, occurring in distinct stages. Each stage or change brings about behavior that is assumed to be qualitatively different from behavior at earlier stages. Consider the example of cognitive development again. We'll see later in the chapter that some cognitive developmentalists suggest that as we develop, our thinking changes in fundamental ways, and that such development is not just a matter of quantitative change but of qualitative change.

**CRITICAL AND SENSITIVE PERIODS: GAUGING THE IMPACT OF ENVIRONMENTAL EVENTS.** If a woman comes down with a case of rubella (German measles) in the first 20 weeks of pregnancy, the consequences for the child she is carrying are likely to be devastating: They include the potential for blindness, deafness, and heart defects. However, if she comes down with the exact same strain of rubella in week 30 of pregnancy, damage to the child is unlikely.

The differing outcomes of the disease in the two periods demonstrate the concept of critical periods. A **critical period** is a specific time during development when a particular event has its greatest consequences. Critical periods occur when the presence of certain kinds of environmental stimuli enable development to proceed normally, or when exposure to certain stimuli results in abnormal development. For example, mothers who take drugs at particular times during pregnancy may cause permanent harm to their developing child (Mølgaard-Nielsen, Pasternak, & Hviid, 2013; Nygaard et al., 2017).

Although early specialists in lifespan development placed great emphasis on the importance of critical periods, more recent thinking suggests that in many realms, individuals are more malleable than was first thought, particularly in the domain of personality

#### continuous change

gradual development in which achievements at one level build on those of previous levels

#### discontinuous change

development that occurs in distinct steps or stages, with each stage bringing about behavior that is assumed to be qualitatively different from behavior at earlier stages

#### critical period

a specific time during development when a particular event has its greatest consequences and the presence of certain kinds of environmental stimuli is necessary for development to proceed normally