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
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- Figure 14-11 on job participation by gender
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- *From Research to Practice* box on mammogram guidelines
- *Developmental Diversity and Your Life* box on the experience of menopause symptoms across cultures
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- 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
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- Figure 16-5 on remarriage rates
- Multigenerational families
- How to avoid career burnout
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- Figure 16-11 on rates of immigration into the United States

Chapter 17, Physical and Cognitive Development in Late Adulthood

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- 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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Revel is an interactive learning environment that deeply engages students and prepares them for class. Media and assessment integrated directly within the authors' narrative lets students read, explore interactive content, and practice in one continuous learning path. Thanks to the dynamic reading experience in Revel, students come to class prepared to discuss, apply, and learn from instructors and from each other.

Learn more about Revel:
www.pearson.com/revel

The ninth edition includes integrated videos and media content throughout, allowing students to explore topics more deeply at the point of relevancy. Revel makes the content come alive as students respond to "Myth or Truth" and "Fun Facts and a Lie" interactives. Each chapter also includes at least one "Trending Topic" feature, which explores cutting-edge research or current events.

Highly engaging interactives encourage student participation. Interactive scenarios invite students into "choose your own path"–type activities. Other interactives lead them through how a health care professional, counselor, teacher, or parent might react to a specific developmental situation or solve a problem. Students can also explore interactive figures using drag-and-drop and predictive graphing tools, as well as hotspot images.

Each chapter includes a *Thinking About the Data* prompt, which encourages the student to think about what is behind the data they see in graphs and tables using a data-driven Social Explorer activity in Revel.

Finally, a set of carefully curated videos builds on text content, exploring developmental psychology from a variety of perspectives, including a deeper look at diversity and the latest in neuroscience.

Revel also offers the ability for students to assess their content mastery by taking multiple-choice quizzes that offer instant feedback and by participating in a variety of writing assignments, such as peer-reviewed questions and autograded assignments.

MyVirtualLife integration enables students to apply developmental concepts in a simulated environment within their Revel™ course. MyVirtualLife is an interactive simulation that allows students to parent a child from birth to age 18, making decisions on the child's behalf. Once the virtual child turns 18, the student user's perspective flips for the second half of the program, which enables students to live a simulated life and see the impact of their first-person decisions over the course of a lifetime.

Revel Combo Card

The Revel Combo Card provides an all-in-one access code and loose-leaf print reference (delivered by mail).

Ancillaries

Development Across the Life Span, Ninth Edition, is accompanied by a superb set of teaching and learning material.

- **Instructor's Resource Manual** (ISBN: 0135173523). The Instructor's Resource Manual has been thoroughly reviewed and revised for the ninth edition. It includes learning objectives, key terms and concepts, self-contained lecture suggestions, and class activities for each chapter. The Instructor's Resource Manual is available for download via the Pearson Instructor's Resource Center (www.pearsonhighered.com) and Revel.
- **Video Enhanced PowerPoint Slides** (ISBN: 0135192471). These slides bring the Feldman design right into the classroom, drawing students into the lecture and providing wonderful interactive activities, visuals, and videos.
- **PowerPoint Lecture Slides** (ISBN: 0135173531). The lecture slides provide an active format for presenting concepts from each chapter and feature prominent figures and tables from the text. The PowerPoint Lecture Slides are available for download via the Pearson Instructor's Resource Center (www.pearsonhighered.com) or Revel.
- **Test Bank** (ISBN: 0135173566). For the ninth edition, each question was checked for accuracy to ensure that the correct answer was marked and the page reference was accurate. The test bank contains over 1,600 multiple-choice, true/false, and essay questions, each correlated to chapter topic and learning objective. The test bank features the identification of each question as factual, conceptual, applied, or analytical. Finally, each item is also identified in terms of difficulty level to allow professors to customize their tests and ensure a balance of question types. Each chapter of the test item file begins with the Total Assessment Guide: an easy-to-reference grid that makes creating tests easier by organizing the test questions by text section, question type, and whether it is factual, conceptual, applied, or analytical. Each chapter ends by listing the Revel assessment questions featured in the digital Revel textbook product.
- **MyTest** (ISBN: 0135173558). The test bank comes with the Pearson MyTest, a powerful assessment generation program that helps instructors easily create and print quizzes and exams. Questions and tests can be authored online, allowing instructors ultimate flexibility and the ability to efficiently manage assessments anytime, anywhere. For more information, go to www.PearsonMyTest.com.
- **Pearson Teaching Films Lifespan Development Video (ISBN: 0205656021)** engages students and brings to life a wide range of topics spanning the prenatal period through the end of the life span. International videos shot on location allow students to observe similarities and differences in human development across various cultures.
- **Supplementary Texts.** Contact your Pearson representative to package any of these supplementary texts with *Development Across the Life Span*, Ninth Edition.
  - ***Current Directions in Developmental Psychology*** (ISBN: 0205597505). Readings from the American Psychological Society. This exciting reader includes over 20 articles that have been carefully selected for the undergraduate audience and taken from the very accessible *Current Directions in Psychological Science* journal. These timely, cutting-edge articles allow instructors to bring their students a real-world perspective about today's most current and pressing issues in psychology. The journal is discounted when packaged with this text for college adoptions.
  - ***Twenty Studies That Revolutionized Child Psychology* by Wallace E. Dixon, Jr.** (ISBN: 0130415723). Presenting the seminal research studies that have shaped modern developmental psychology, this brief text provides an overview of the environment that gave rise to each study, its experimental design, its findings, and its impact on current thinking in the discipline.
  - ***Human Development in Multicultural Contexts: A Book of Readings*** (ISBN: 0130195235). Written by Michele A. Paludi, this compilation of readings highlights cultural influences in developmental psychology.
  - ***The Psychology Major: Careers and Strategies for Success*** (ISBN: 0205684688). Written by Eric Landrum (Idaho State University), Stephen Davis (Emporia State University), and Terri Landrum (Idaho State University), this 160-page paperback provides valuable information on career options available to psychology majors, tips for improving academic performance, and a guide to the APA style of research reporting.

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About the Author

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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.

Chapter Overview

Prologue: New Conceptions

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.


AP Images/Alamy Stock Photo


Julie Malakie/Associated Press

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

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

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

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.

Monkey Business/Fotolia

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

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

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).

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

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).

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

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.

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

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

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	• What determines the sex of a child? (2) • What are the long-term results of premature birth? (3) • What are the benefits of breast milk? (4) • What are the consequences of early or late sexual maturation? (11) • What leads to obesity in adulthood? (13) • How do adults cope with stress? (15) • What are the outward and internal signs of aging? (17) • How do we define death? (19)
Cognitive development	Emphasizes intellectual abilities, including learning, memory, problem solving, and intelligence	• What are the earliest memories that can be recalled from infancy? (5) • What are the intellectual consequences of watching television? (7) • Do spatial reasoning skills relate to music practice? (7) • Are there benefits to bilingualism? (9) • How does an adolescent's egocentrism affect his or her view of the world? (11) • Are there ethnic and racial differences in intelligence? (9) • How does creativity relate to intelligence? (13) • Does intelligence decline in late adulthood? (17)
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	• Do newborns respond differently to their mothers than to others? (3) • What is the best procedure for disciplining children? (8) • When does a sense of gender identity develop, and how do sex and gender provide a context for development? (8) • How can we promote cross-race friendships? (10) • What are the causes of adolescent suicide? (12) • How do we choose a romantic partner? (14) • Do the effects of parental divorce last into old age? (18) • Do people withdraw from others in late adulthood? (18) • What are the emotions involved in confronting death? (19)

*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).

DPA/The Image Works

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.

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

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

Continuous Change	*Discontinuous Change*
• Change is gradual. • Achievements at one level build on previous levels. • Underlying developmental processes remain the same over the life span.	• Change occurs in distinct steps or stages. • Behavior and processes are qualitatively different at different stages.
Critical Periods	***Sensitive Periods***
• Certain environmental stimuli are necessary for normal development. • Emphasized by early developmentalists.	• People are susceptible to certain environmental stimuli, but consequences of absent stimuli are reversible. • Current emphasis in lifespan development.
Lifespan Approach	***Focus on Particular Periods***
• Current theories emphasize growth and change throughout life; relatedness of different periods.	• Infancy and adolescence are emphasized by early developmentalists as most important periods.
Nature (Genetic Factors)	***Nurture (Environmental Factors)***
• Emphasis is on discovering inherited genetic traits and abilities.	• Emphasis is on environmental influences that affect a person's development.

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.

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

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.

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 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).

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

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

and social development. For instance, rather than suffering permanent damage from a lack of certain kinds of early social experiences, there is increasing evidence that people can use later experiences to their benefit, to help them overcome earlier deficits.

sensitive period
a point in development when organisms are particularly susceptible to certain kinds of stimuli in their environments, but the absence of those stimuli does not always produce irreversible consequences

Consequently, developmentalists are now more likely to speak of sensitive periods rather than critical periods. In a **sensitive period**, organisms are particularly susceptible to certain kinds of stimuli in their environment. A sensitive period represents the optimal period for particular capacities to emerge, and children are particularly sensitive to environmental influences.

It is important to understand the difference between the concepts of critical periods and sensitive periods. In critical periods, it is assumed that the absence of certain kinds of environmental influences is likely to produce permanent, irreversible consequences for the developing individual. In contrast, although the absence of particular environmental influences during a sensitive period may hinder development, it is possible for later experiences to overcome the earlier deficits. In other words, the concept of sensitive periods recognizes the plasticity of developing humans (Hooks & Chen, 2008; Hartley & Lee, 2015; Piekarski et al., 2017).

LIFESPAN APPROACHES VERSUS A FOCUS ON PARTICULAR PERIODS. On which part of the life span should developmentalists focus their attention? For early developmentalists, the answers tended to be infancy and adolescence. Most attention was clearly concentrated on those two periods, largely to the exclusion of other parts of the life span.

Today, the story is different. Developmentalists now believe that the entire life span is important, for several reasons. One is the discovery that developmental growth and change continue during every part of life—as we'll discuss throughout this book.

Furthermore, an important part of every person's environment is the presence of other people around him or her—the person's social environment. To fully understand the social influences on people of a given age, we need to understand the people who are in large measure providing those influences. For instance, to understand development in infants, we need to unravel the effects of their parents' ages on their social environments. A 15-year-old first-time mother will provide parental influences of a very different sort from those provided by an experienced 37-year-old mother. Consequently, infant development is in part an outgrowth consequence of adult development.

In addition, as lifespan developmentalist Paul Baltes points out, development across the life span involves both gains and losses. With age, certain capabilities become more refined and sophisticated, while others involve loss of skill and capacity. For example, vocabulary tends to grow throughout childhood, and this growth continues through most of adulthood. At the same time, certain physical abilities, like reaction time, improve until early and middle adulthood, when they begin to decline (Baltes, 2003; Ghisletta et al., 2010).

People also shift in how they invest their resources (in terms of motivation, energy, and time) at different points during the life span. Early in life, more of one's personal resources are devoted to activities involving growth, such as studying or learning new skills. As one grows older, more resources are devoted to dealing with the losses people face during late adulthood (Staudinger & Leipold, 2003).

THE RELATIVE INFLUENCE OF NATURE AND NURTURE ON DEVELOPMENT. One of the enduring questions of development involves how much of people's behavior is due to their genetically determined nature and how much is due to nurture, the influences of the physical and social environment in which a child is raised. This issue, which has deep philosophical and historical roots, has dominated much work in lifespan development (Wexler, 2006).

In this context, *nature* refers to traits, abilities, and capacities that are inherited from one's parents. It encompasses any factor that is produced by the predetermined unfolding of genetic information—a process known as **maturation**. These genetic, inherited influences are at work as we move from the one-cell organism that is created at the moment of conception to the billions of cells that make up a fully formed human. Nature

maturation
the predetermined unfolding of genetic information

influences whether our eyes are blue or brown, whether we have thick hair throughout life or eventually go bald, and how good we are at athletics. Nature allows our brains to develop in such a way that we can read the words on this page.

In contrast, *nurture* refers to the environmental influences that shape behavior. Some of these influences may be biological, such as the impact of a pregnant mother's use of cocaine on her unborn child or the amount and kind of food available to children. Other environmental influences are more social, such as the ways parents discipline their children and the effects of peer pressure on an adolescent. Finally, some influences are a result of larger, societal-level factors, such as the socioeconomic circumstances in which people find themselves.

THE LATER ACTION OF NATURE AND NURTURE. If our traits and behavior were determined solely by either nature or nurture, there would probably be little debate regarding the issue. However, for most critical behaviors this is hardly the case. Take, for instance, one of the most controversial areas: intelligence. As we'll consider in detail in Chapter 9, the question of whether intelligence is determined primarily by inherited, genetic factors—nature—or is shaped by environmental factors—nurture—has caused lively and often bitter arguments that have spilled out of the scientific arena and into the realm of politics and social policy.

Consider the implications of the issue: If the extent of one's intelligence is primarily determined by heredity and consequently is largely fixed at birth, then efforts to improve intellectual performance later in life may be doomed to failure. In contrast, if intelligence is primarily a result of environmental factors, such as the amount and quality of schooling and stimulation to which one is exposed, then we would expect that an improvement in social conditions could bring about an increase in intelligence.

The extent of social policy affected by ideas about the origins of intelligence illustrates the significance of issues that involve the nature–nurture question. As we address this question in relation to several topical areas throughout this book, we should keep in mind that developmentalists reject the notion that behavior is the result solely of either nature *or* nurture. Instead, the question is one of degree—and the specifics of that, too, are hotly debated.

Furthermore, the interaction of genetic and environmental factors is complex, in part because certain genetically determined traits have not only a direct influence on children's behavior, but an indirect influence in shaping children's *environments* as well. For example, a child who is consistently cranky and who cries a great deal—a trait that may be produced by genetic factors—may influence his or her environment by making his or her parents so highly responsive to the insistent crying that they rush to comfort the child whenever he or she cries. Their responsivity to the child's genetically determined behavior consequently becomes an environmental influence on his or her subsequent development (Bradley & Corwyn, 2008; Stright, Gallagher, & Kelley, 2008; Barnes & Boutwell, 2012).

Similarly, although our genetic background orients us toward particular behaviors, those behaviors will not necessarily occur in the absence of an appropriate environment. People with similar genetic backgrounds (such as identical twins) may behave in very different ways, and people with highly dissimilar genetic backgrounds can behave quite similarly to one another in certain areas (Kato & Pedersen, 2005; Segal et al., 2015; Sudharsanan, Behrman, & Kohler, 2016).

In sum, the question of how much of a given behavior is due to nature, and how much to nurture, is a challenging one. Ultimately, we should consider the two sides of the nature–nurture issue as opposite ends of a continuum, with particular behaviors falling somewhere between the two ends. We can say something similar about the other controversies that we have considered. For instance, continuous versus discontinuous development is not an either/or proposition; some forms of development fall toward the continuous end of the continuum, whereas others lie closer to the discontinuous end. In short, few statements about development involve either/or absolutes (Rutter, 2006; Deater-Deckard & Cahill, 2007).

Module 1.1 Review

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

Lifespan development, a scientific approach to understanding human growth and change throughout life, encompasses physical, cognitive, social, and personality development.

LO 1.2 Describe the areas that lifespan development specialists cover.

Developmentalists focus on physical development, on cognitive development, and on personality and social development. In addition to choosing to specialize in a particular topical area, developmentalists also typically look at a particular age range.

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

Membership in a cohort, based on age and place of birth, subjects people to influences based on historical events (history-graded influences). People are also subject to age-graded influences, sociocultural-graded influences, and non-normative life events. Culture and ethnicity also play an important role in development—both broad culture and aspects of culture, such as race, ethnicity, and socioeconomic status.

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

Four important issues in lifespan development are continuity versus discontinuity in development, the importance of critical periods, whether to focus on certain periods or on the entire life span, and the nature–nurture controversy.

Journal Writing Prompt

Applying Lifespan Development: What are some examples of the ways culture (either broad culture or aspects of culture) affects human development?

Theoretical Perspectives on Lifespan Development

In Europe, there was no concept of "childhood" until the 17th century. Instead, children were simply thought of as miniature adults. They were assumed to be subject to the same needs and desires as adults, to have the same vices and virtues as adults, and to warrant no more privileges than adults. They were dressed the same as adults, and their work hours were the same as adults. Children also received the same punishments for misdeeds. If they stole, they were hanged; if they did well, they could achieve prosperity, at least so far as their station in life or social class would allow.

This view of childhood seems wrong-headed now, but at the time it was what passed for lifespan development. From this perspective, there were no differences due to age; except for size, people were assumed to be virtually unchanging, at least on a psychological level, throughout most of the life span (Ariès, 1962; Hutton, 2004; Wines, 2006).

North Wind Picture Archives/Alamy Stock Photo

Society's view of childhood, and what is appropriate to ask of children, has changed through the ages. These children worked full time in mines in the early 1900s.

Although, looking back over several centuries, it is easy to reject the medieval view of childhood, it is less clear how to formulate a contemporary substitute. Should our view of development focus on the biological aspects of change, growth, and stability over the life span? The cognitive or social aspects? Or some other factors?

People who study lifespan development approach the field from a number of different perspectives. Each general perspective encompasses one or more *theories*—broad, organized explanations and predictions concerning phenomena of interest. A theory provides a framework for understanding the relationships among a seemingly unorganized set of facts or principles.

We all develop theories about development, based on our experience, folklore, and articles in magazines and newspapers. However, theories in lifespan development are different. Whereas our own personal theories are built on unverified

observations that are developed haphazardly, developmentalists' theories are more formal, based on a systematic integration of prior findings and theorizing. These theories allow developmentalists to summarize and organize prior observations, and they also permit them to move beyond existing observations to draw deductions that may not be immediately apparent. In addition, these theories are then subject to rigorous testing in the form of research. By contrast, the developmental theories of individuals are not subject to such testing and may never be questioned at all (Thomas, 2001).

We will consider six major theoretical perspectives used in lifespan development: the psychodynamic, behavioral, cognitive, humanistic, contextual, and evolutionary perspectives. Each emphasizes somewhat different aspects of development and steers developmentalists in particular directions. Furthermore, each perspective continues to evolve and change, as befits a growing and dynamic discipline.

The Psychodynamic Perspective: Focusing on the Inner Person

LO 1.5 Describe how the psychodynamic perspective explains lifespan development.

When Marisol was 6 months old, she was involved in a bloody automobile accident—or so her parents tell her, since she has no conscious recollection of it. Now, however, at age 24, she is having difficulty maintaining relationships, and her therapist is seeking to determine whether her current problems are a result of the earlier accident.

Looking for such a link might seem a bit far-fetched, but to proponents of the **psychodynamic perspective**, it is not so improbable. Advocates of the psychodynamic perspective believe that much of behavior is motivated by inner forces, memories, and conflicts of which a person has little awareness or control. The inner forces, which may stem from one's childhood, continually influence behavior throughout the life span.

psychodynamic perspective
the approach stating that behavior is motivated by inner forces, memories, and conflicts that are generally beyond people's awareness and control

FREUD'S PSYCHOANALYTIC THEORY. The psychodynamic perspective is most closely associated with a single person and theory: Sigmund Freud and his psychoanalytic theory. Freud, who lived from 1856 to 1939, was a Viennese physician whose revolutionary ideas ultimately had a profound effect not only on the fields of psychology and psychiatry but also on Western thought in general (Greenberg, 2012; Roth, 2016).

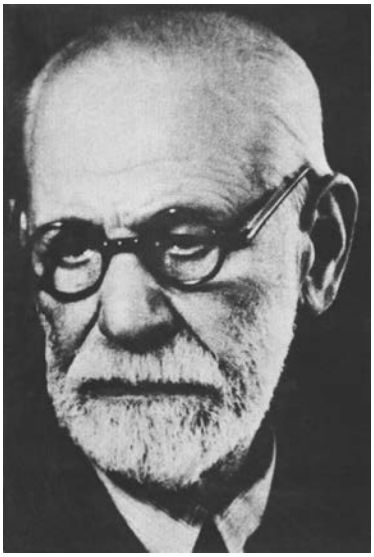
Freud's **psychoanalytic theory** suggests that unconscious forces act to determine personality and behavior. To Freud, the *unconscious* is a part of the personality about which a person is unaware. It contains infantile wishes, desires, demands, and needs that, because of their disturbing nature, are hidden from conscious awareness. Freud suggested that the unconscious is responsible for a good part of our everyday behavior.

psychoanalytic theory
the theory proposed by Sigmund Freud that suggests that unconscious forces act to determine personality and behavior

According to Freud, everyone's personality has three aspects: id, ego, and superego. The *id* is the raw, unorganized, inborn part of personality that is present at birth. It represents primitive drives related to hunger, sex, aggression, and irrational impulses. The *ego* is the part of personality that is rational and reasonable. The ego acts as a buffer between the real world outside of us and the primitive id. Finally, the *superego* represents a person's conscience, incorporating distinctions between right and wrong. It begins to develop around age 5 or 6 and is learned from an individual's parents, teachers, and other significant figures.

In addition to providing an account of the various parts of the personality, Freud also suggested the ways in which personality developed during childhood. He argued that **psychosexual development** occurs as children pass through a series of stages in which pleasure, or gratification, is focused on a particular biological function and body part. As illustrated in Table 1-3, he suggested that pleasure shifts from the mouth (the *oral stage*) to the anus (the *anal stage*) and eventually to the genitals (the *phallic stage* and the *genital stage*).

psychosexual development
according to Sigmund Freud, a series of stages that children pass through in which pleasure, or gratification, focuses on a particular biological function and body part


AISA - Everett/Shutterstock
Sigmund Freud.

According to Freud, if children are unable to gratify themselves sufficiently during a particular stage—or conversely, if they receive too much gratification—fixation may

Table 1-3 Freud's and Erikson's Theories

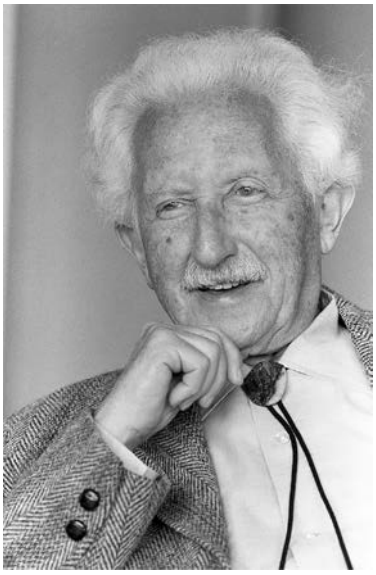
Approximate Age	Freud's Stages of Psychosexual Development	Major Characteristics of Freud's Stages	Erikson's Stages of Psychosocial Development	Positive and Negative Outcomes of Erikson's Stages
Birth to 12–18 months	Oral	Interest in oral gratification from sucking, eating, mouthing, biting	Trust vs. mistrust	*Positive:* Feelings of trust from environmental support *Negative:* Fear and concern regarding others
12–18 months to 3 years	Anal	Gratification from expelling and withholding feces; coming to terms with society's controls relating to toilet training	Autonomy vs. shame and doubt	*Positive:* Self-sufficiency if exploration is encouraged *Negative:* Doubts about self, lack of independence
3 to 5–6 years	Phallic	Interest in the genitals; coming to terms with Oedipal conflict, leading to identification with same-sex parent	Initiative vs. guilt	*Positive:* Discovery of ways to initiate actions *Negative:* Guilt from actions and thoughts
5–6 years to adolescence	Latency	Sexual concerns largely unimportant	Industry vs. inferiority	*Positive:* Development of sense of competence *Negative:* Feelings of inferiority, no sense of mastery
Adolescence to adulthood (Freud) Adolescence (Erikson)	Genital	Reemergence of sexual interests and establishment of mature sexual relationships	Identity vs. role diffusion	*Positive:* Awareness of uniqueness of self, knowledge of role to be followed *Negative:* Inability to identify appropriate roles in life
Early adulthood (Erikson)			Intimacy vs. isolation	*Positive:* Development of loving, sexual relationships and close friendships *Negative:* Fear of relationships with others
Middle adulthood (Erikson)			Generativity vs. stagnation	*Positive:* Sense of contribution to continuity of life *Negative:* Trivialization of one's activities
Late adulthood (Erikson)			Ego integrity vs. despair	*Positive:* Sense of unity in life's accomplishments *Negative:* Regret over lost opportunities of life

occur. *Fixation* is behavior reflecting an earlier stage of development due to an unresolved conflict. For instance, fixation at the oral stage might produce an adult who is unusually absorbed in oral activities—eating, talking, or chewing gum.

psychosocial development
the approach that encompasses changes in our interactions with and understandings of one another, as well as in our knowledge and understanding of ourselves as members of society

ERIKSON'S PSYCHOSOCIAL THEORY. Psychoanalyst Erik Erikson, who lived from 1902 to 1994, provided an alternative psychodynamic view in his theory of psychosocial development, which emphasizes our social interaction with other people. In Erikson's view, both society and culture challenge and shape us. **Psychosocial development** encompasses changes in our interactions with and understandings of one another as well as in our knowledge and understanding of ourselves as members of society (Erikson, 1963; Dunkel, Kim, Papini, 2012; Jones et al., 2014; Malone et al., 2016; Knight, 2017).

Erikson's theory suggests that developmental change occurs throughout our lives in eight distinct stages (see Table 1-3). The stages emerge in a fixed pattern and are similar for all people. Erikson argued that each stage presents a crisis or conflict that the individual must resolve. Although no crisis is ever fully resolved, making life increasingly complicated, the individual must at least address the crisis of each stage sufficiently to deal with demands made during the next stage of development.


Jon Erikson/The Image Works

Erik Erikson.

Unlike Freud, who regarded development as relatively complete by adolescence, Erikson suggested that growth and change continue throughout the life span. For instance, as we'll discuss further in Chapter 16, Erikson suggested that during middle adulthood, people pass through the *generativity versus stagnation stage*, in which their contributions to family, community, and society can produce either positive feelings about the continuity of life or a sense of stagnation and disappointment about what they are passing on to future generations (de St. Aubin, McAdams, & Kim, 2004).

ASSESSING THE PSYCHODYNAMIC PERSPECTIVE. It is hard for us to grasp the full significance of psychodynamic theories represented by Freud's psychoanalytic theory and Erikson's theory of psychosocial development. Freud's introduction of the notion that unconscious influences affect behavior was a monumental accomplishment, and that it seems at all reasonable to us shows how extensively the idea of the unconscious

has pervaded thinking in Western cultures. In fact, work by contemporary researchers studying memory and learning suggests that we carry with us memories—of which we are not consciously aware—that have a significant impact on our behavior.

However, many of the most basic principles of Freud's psychoanalytic theory have been called into question because they have not been validated by subsequent research. In particular, the notion that people pass through various stages in childhood that determine their adult personalities has little definitive research support. In addition, because much of Freud's theory was based on a limited population of upper-middle-class Austrians living during a strict, puritanical era, its application to broad, multicultural populations is questionable. Finally, because Freud's theory focuses primarily on male development, it has been criticized as sexist and may be interpreted as devaluing women. For such reasons, many developmentalists question Freud's theory (Schachter, 2005; Gillham, Law, & Hickey, 2010; O'Neil & Denke, 2016).

Erikson's view that development continues throughout the life span is highly important—and has received considerable support. However, the theory also has its drawbacks. Like Freud's theory, it focuses more on men's than women's development. It is also vague in some respects, making it difficult for researchers to test rigorously. And, as is the case with psychodynamic theories in general, it is difficult to make definitive predictions about a given individual's behavior using the theory. In sum, then, the psychodynamic perspective provides good descriptions of past behavior, but imprecise predictions of future behavior (Zauszniewski & Martin, 1999; de St. Aubin & McAdams, 2004).

The Behavioral Perspective: Focusing on Observable Behavior

LO 1.6 **Describe how the behavioral perspective explains lifespan development.**

When Elissa Sheehan was 3, a large brown dog bit her, and she needed dozens of stitches and several operations. From the time she was bitten, she broke into a sweat whenever she saw a dog, and in fact never enjoyed being around any pet.

To a lifespan development specialist using the behavioral perspective, the explanation for Elissa's behavior is straightforward: She has a learned fear of dogs. Rather than looking inside the organism at unconscious processes, the **behavioral perspective** suggests that the keys to understanding development are observable behavior and outside stimuli in the environment. If we know the stimuli, we can predict the behavior. In this respect, the behavioral perspective reflects the view that nurture is more important to development than nature.

behavioral perspective
the approach suggesting that the keys to understanding development are observable behavior and outside stimuli in the environment

Behavioral theories reject the notion that people universally pass through a series of stages. Instead, people are assumed to be affected by the environmental stimuli to which they happen to be exposed. Developmental patterns, then, are personal, reflecting a particular set of environmental stimuli, and behavior is the result of continuing exposure to specific factors in the environment. Furthermore, developmental change is viewed in quantitative, rather than qualitative, terms. For instance, behavioral theories hold that advances in problem-solving capabilities as children age are largely a result of greater mental *capacities* rather than changes in the *kind* of thinking that children are able to bring to bear on a problem.


Hulton Archive/Getty Images

John B. Watson.

CLASSICAL CONDITIONING: STIMULUS SUBSTITUTION.

> *Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant-chief, and yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities. (Watson, J. B. [1925]. Behaviorism. New York: Norton.)*

With these words, John B. Watson, one of the first American psychologists to advocate a behavioral approach, summed up the behavioral perspective. Watson, who lived

from 1878 to 1958, believed strongly that we could gain a full understanding of development by carefully studying the stimuli that composed the environment. In fact, he argued that by effectively controlling a person's environment, it was possible to produce virtually any behavior.

classical conditioning
a type of learning in which an organism responds in a particular way to a neutral stimulus that normally does not bring about that type of response

As we'll consider further in Chapter 5, **Classical conditioning** occurs when an organism learns to respond in a particular way to a neutral stimulus that normally does not evoke that type of response. For instance, if a dog is repeatedly exposed to the pairing of the sound of a bell and the presentation of meat, it may learn to react to the bell alone in the same way it reacts to the meat—by salivating and wagging its tail with excitement. Dogs don't typically respond to bells in this way; the behavior is a result of conditioning, a form of learning in which the response associated with one stimulus (food) comes to be connected to another—in this case, the bell.

The same process of classical conditioning explains how we learn emotional responses. In the case of dog-bite victim Elissa Sheehan, for instance, Watson would say that one stimulus has been substituted for another: Elissa's unpleasant experience with a particular dog (the initial stimulus) has been transferred to other dogs and to pets in general.

OPERANT CONDITIONING. In addition to classical conditioning, other types of learning also derive from the behavioral perspective. The learning approach that probably has had the greatest influence is operant conditioning. **Operant conditioning** is a form of learning in which a voluntary response is strengthened or weakened by its association with positive or negative consequences. It differs from classical conditioning in that the response being conditioned is voluntary and purposeful rather than automatic (such as salivating).

operant conditioning
a form of learning in which a voluntary response is strengthened or weakened by its association with positive or negative consequences

In operant conditioning, formulated and championed by psychologist B. F. Skinner (1904–1990), individuals learn to act deliberately on their environment in order to bring about desired consequences (Skinner, 1975). In a sense, then, people *operate* on their environment to bring about a desired state of affairs.

Whether children and adults will seek to repeat a behavior depends on whether it is followed by reinforcement. *Reinforcement* is the process by which a stimulus is provided that increases the probability that a preceding behavior will be repeated. Hence, a student is apt to work harder in school if he or she receives good grades; workers are likely to labor harder at their jobs if their efforts are tied to pay increases; and people are more apt to buy lottery tickets if they are reinforced by winning occasionally. In addition, *punishment*, the introduction of an unpleasant or a painful stimulus or the removal of a desirable stimulus, will decrease the probability that a preceding behavior will occur in the future.

Behavior that is reinforced, then, is more likely to be repeated in the future, while behavior that receives no reinforcement or is punished is likely to be discontinued, or in the language of operant conditioning, *extinguished*. Principles of operant conditioning are used in **behavior modification**, a formal technique for promoting the frequency of desirable behaviors and decreasing the incidence of unwanted ones. Behavior modification has been used in a variety of situations, ranging from teaching severely intellectually disabled people the rudiments of language to helping people stick to diets (Wupperman et al., 2012; Wirth, Wabitsch & Hauner, 2014; Miltenberger, 2016).

behavior modification
a formal technique for promoting the frequency of desirable behaviors and decreasing the incidence of unwanted ones

SOCIAL-COGNITIVE LEARNING THEORY: LEARNING THROUGH IMITATION. A 5-year-old boy seriously injures his 22-month-old cousin while imitating a violent wrestling move he had seen on television. Although the infant sustained spinal cord injuries, he improved and was discharged five weeks after his hospital admission (Reuters Health eLine, 2002; Ray & Heyes, 2011).

Cause and effect? We can't know for sure, but it certainly seems possible, especially looking at the situation from the perspective of social-cognitive learning theory. According to developmental psychologist Albert Bandura and colleagues, a significant amount of learning is explained by **social-cognitive learning theory**, an approach that emphasizes learning by observing the behavior of another person, called a *model* (Bandura, 1994, 2002).

social-cognitive learning theory
learning by observing the behavior of another person, called a model

According to social-cognitive learning theory, behavior is learned primarily through observation and not through trial and error, as it is with operant conditioning. We don't need to experience the consequences of a behavior ourselves to learn it. Social-cognitive learning theory holds that when we see the behavior of a model being rewarded, we are likely to imitate that behavior. For instance, in one classic experiment, children who were afraid of dogs were exposed to a model, nicknamed the "Fearless Peer," who was seen playing happily with a dog (Bandura, Grusec, & Menlove, 1967). After exposure, the children who previously had been afraid were more likely to approach a strange dog than children who had not seen the model.

Bandura suggests that social-cognitive learning proceeds in four steps (Bandura, 1986). First, an observer must pay attention and perceive the most critical features of a model's behavior. Second, the observer must successfully recall the behavior. Third, the observer must reproduce the behavior accurately. Finally, the observer must be motivated to learn and carry out the behavior.

From *a social worker's* perspective

How do the concepts of social learning and modeling relate to the mass media, and how might exposure to mass media influence a child's family life?

Jutta Klee/Getty Images

What form of learning is being demonstrated in this picture?

ASSESSING THE BEHAVIORAL PERSPECTIVE. Research using the behavioral perspective has made significant contributions, ranging from techniques for educating children with severe intellectual disabilities to identifying procedures for curbing aggression. At the same time, some controversies surround the behavioral perspective. For example, although they are part of the same general behavioral perspective, classical and operant conditioning and social learning theory diverge in some basic ways. Both classical and operant conditioning present learning in terms of external stimuli and responses, in which the only important factors are the observable features of the environment. In such an analysis, people and other organisms are like inanimate "black boxes." Nothing that occurs inside the box is understood—nor much cared about, for that matter.

To social learning theorists, such an analysis is an oversimplification. They argue that what makes people different from rats and pigeons is the occurrence of mental activity, in the form of thoughts and expectations. A full understanding of people's development, they maintain, cannot occur without moving beyond external stimuli and responses.

In many ways, social learning theory has come to predominate in recent decades over classical and operant conditioning theories. In fact, another perspective that focuses explicitly on internal mental activity has become enormously influential. This is the cognitive approach, which we consider next.

The Cognitive Perspective: Examining the Roots of Understanding

LO 1.7 Describe how the cognitive perspective explains lifespan development.

When 3-year-old Jake is asked why it sometimes rains, he answers "so the flowers can grow." When his 11-year-old sister Lila is asked the same question, she responds "because of evaporation from the surface of the earth." And when their cousin Ajima, who is studying meteorology in graduate school, considers the same question, her extended answer includes a discussion of cumulonimbus clouds, the Coriolis effect, and synoptic charts.

To a developmental theorist using the cognitive perspective, the difference in the sophistication of the answers is evidence of a different degree of knowledge and understanding, or cognition. The **cognitive perspective** focuses on the processes that allow people to know, understand, and think about the world.

The cognitive perspective emphasizes how people internally represent and think about the world. By using this perspective, developmental researchers hope to understand

cognitive perspective
the approach that focuses on the processes that allow people to know, understand, and think about the world

how children and adults process information and how their ways of thinking and understanding affect their behavior. They also seek to learn how cognitive abilities change as people develop, the degree to which cognitive development represents quantitative and qualitative growth in intellectual abilities, and how different cognitive abilities are related to one another.

PIAGET'S THEORY OF COGNITIVE DEVELOPMENT. No single person has had a greater impact on the study of cognitive development than Jean Piaget, who lived from 1896 to 1980. A Swiss psychologist, Piaget proposed that all people pass in a fixed sequence through a series of universal stages of cognitive development. He suggested that not only does the quantity of information increase in each stage, but the quality of knowledge and understanding changes as well. His focus was on the change in cognition that occurs as children move from one stage to the next (Piaget, 1962, 1983).

Although we'll consider Piaget's theory in detail beginning in Chapter 5, we can get a broad sense of it now. Piaget suggested that human thinking is arranged into *schemes*, that is, organized mental patterns that represent behaviors and actions. In infants, such schemes represent concrete behavior—a scheme for sucking, for reaching, and for each separate behavior. In older children, the schemes become more sophisticated and abstract, such as the set of skills involved in riding a bike or playing an interactive video game. Schemes are like intellectual computer software programs that direct and determine how data from the world are looked at and handled (Parker, 2005).

Piaget suggests that the growth in children's understanding of the world can be explained by the two basic principles of assimilation and accommodation. *Assimilation* is the process through which people understand an experience in terms of their current stage of cognitive development and way of thinking. Assimilation occurs when people use their current ways of thinking about and understanding the world to perceive and understand a new experience. In contrast, *accommodation* refers to changes in existing ways of thinking in response to encounters with new stimuli or events. Assimilation and accommodation work in tandem to bring about cognitive development.

Assessing Piaget's Theory. Piaget has profoundly influenced our understanding of cognitive development and is one of the towering figures in lifespan development. He provided masterful descriptions of how intellectual growth proceeds during childhood—descriptions that have stood the test of literally thousands of investigations. By and large, then, Piaget's broad view of the sequence of cognitive development is accurate.

However, the specifics of the theory, particularly in terms of change in cognitive capabilities over time, have been called into question. For instance, some cognitive skills clearly emerge earlier than Piaget suggested. Furthermore, the universality of Piaget's stages has been disputed. A growing amount of evidence suggests that the emergence of particular cognitive skills occurs according to a different timetable in non-Western cultures. And in every culture, some people never seem to reach Piaget's highest level of cognitive sophistication: formal, logical thought (Genovese, 2006; De Jesus-Zayas, Buigas, & Denney, 2012; Siegler, 2016).

Ultimately, the greatest criticism leveled at the Piagetian perspective is that cognitive development is not necessarily as discontinuous as Piaget's stage theory suggests. Remember that Piaget argued that growth proceeds in four distinct stages in which the quality of cognition differs from one stage to the next. However, many developmental researchers argue that growth is considerably more continuous. These critics have suggested an alternative perspective, known as the information processing approach, which focuses on the processes that underlie learning, memory, and thinking throughout the life span.

information processing approaches

models that seek to identify the ways individuals take in, use, and store information

INFORMATION PROCESSING APPROACHES. Information processing approaches have become an important alternative to Piagetian approaches. **Information processing approaches** to cognitive development seek to identify the ways individuals take in, use, and store information.

Information processing approaches grew out of developments in the electronic processing of information, particularly as carried out by computers. They assume that even complex behavior such as learning, remembering, categorizing, and thinking can be broken down into a series of individual, specific steps.

Like computers, children are assumed by information processing approaches to have limited capacity for processing information. As they develop, however, they employ increasingly sophisticated strategies that allow them to process information more efficiently.

In stark contrast to Piaget's view that thinking undergoes qualitative advances as children age, information processing approaches assume that development is marked more by quantitative advances. Our capacity to handle information changes with age, as does our processing speed and efficiency. Furthermore, information processing approaches suggest that as we age, we are better able to control the nature of processing and that we can change the strategies we use to process information.

An information processing approach that builds on Piaget's research is known as neo-Piagetian theory. In contrast to Piaget's original work, which viewed cognition as a single system of increasingly sophisticated general cognitive abilities, *neo-Piagetian theory* considers cognition as being made up of different types of individual skills. Using the terminology of information processing approaches, neo-Piagetian theory suggests that cognitive development proceeds quickly in certain areas and more slowly in others. For example, reading ability and the skills needed to recall stories may progress sooner than the sorts of abstract computational abilities used in algebra or trigonometry. Furthermore, neo-Piagetian theorists believe that experience plays a greater role in advancing cognitive development than traditional Piagetian approaches claim (Case, Demetriou, & Platsidou, 2001; Loewen, 2006; Barrouillet & Gaillard, 2011).

Assessing Information Processing Approaches. As we'll see in future chapters, information processing approaches have become a central part of our understanding of development. At the same time, they do not offer a complete explanation for behavior. For example, information processing approaches have paid little attention to behavior such as creativity, in which the most profound ideas often are developed in a seemingly nonlogical, nonlinear manner. In addition, they do not take into account the social context in which development takes place. That's one of the reasons that theories emphasizing the social and cultural aspects of development have become increasingly popular—as we'll discuss next.

COGNITIVE NEUROSCIENCE APPROACHES. One of the most recent additions to the array of approaches taken by lifespan developmentalists, **cognitive neuroscience approaches** look at cognitive development through the lens of brain processes. Like other cognitive perspectives, cognitive neuroscience approaches consider internal mental processes, but they focus specifically on the neurological activity that underlies thinking, problem solving, and other cognitive behavior.

cognitive neuroscience approaches approaches that examine cognitive development through the lens of brain processes

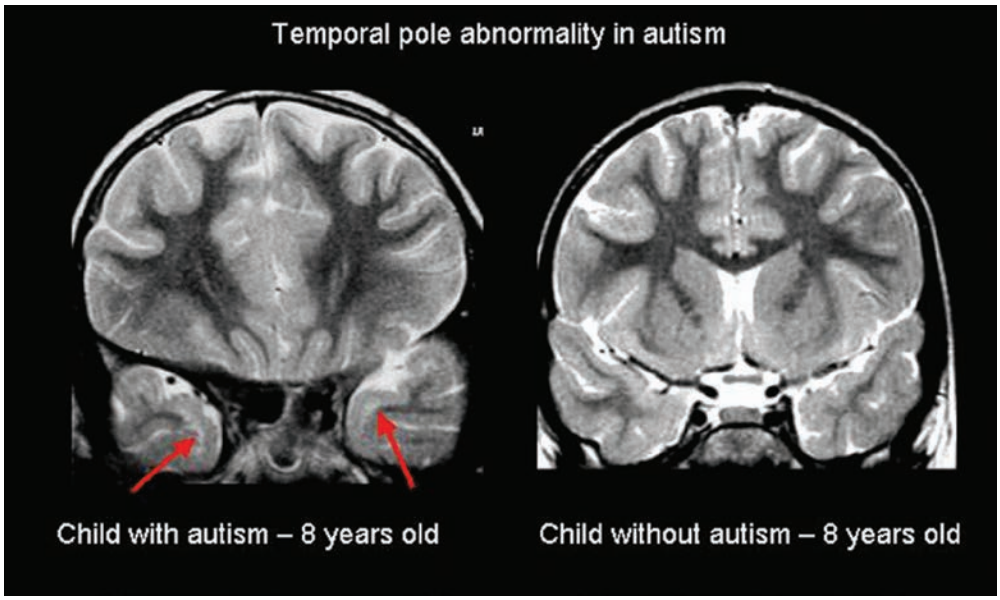
Cognitive neuroscientists seek to identify actual locations and functions within the brain that are related to different types of cognitive activity rather than simply assuming that there are hypothetical or theoretical cognitive structures related to thinking. For example, using sophisticated brain scanning techniques, cognitive neuroscientists have demonstrated that thinking about the meaning of a word activates different areas of the brain than thinking about how the word sounds when spoken.

The work of cognitive neuroscientists is also providing clues to the cause of *autism spectrum disorder*, a major developmental disability that can produce profound language deficits and self-injurious behavior in young children. For example, neuroscientists have found that the brains of children with the disorder sometimes show explosive, dramatic growth in the first year of life, making their heads significantly larger than those of children without the disorder. Furthermore, brain scans show structural differences in the brains of children (see Figure 1-1). By identifying children with the disorder very early in their lives, health-care practitioners can provide crucial early intervention (Lewis & Elman, 2008; Howard et al., 2014; Grant, 2017).

Figure 1-1 The Autistic Brain.

Researchers have found abnormalities in the temporal lobe of the brain in some children diagnosed with autism spectrum disorder.

(**Source:** Boddaert, N. et al. [2009]. MRI Findings in 77 Children with Non-Syndromic Autistic Disorder, PLoS ONE. 2009; 4[2]: e4415.)



Cognitive neuroscience approaches are also on the forefront of cutting-edge research that has identified specific genes associated with disorders ranging from physical problems such as breast cancer to psychological disorders such as schizophrenia. Identifying the genes that make one vulnerable to such disorders is the first step in genetic engineering in which gene therapy can reduce or even prevent the disorder from occurring (Strobel et al., 2007; Ranganath, Minzenberg, & Ragland, 2008; Rodnitzky, 2012).

Assessing Cognitive Neuroscience Approaches. Cognitive neuroscience approaches represent a new frontier in child and adolescent development. Using sophisticated measurement techniques that many of them developed only in the past few years, cognitive neuroscientists are able to peer into the inner functioning of the brain. Advances in our understanding of genetics also has opened a new window into both normal and abnormal development and has suggested a variety of treatments for abnormalities.

Critics of the cognitive neuroscience approach have suggested that it sometimes provides a better *description* than *explanation* of developmental phenomena. For instance, the finding that children with autism spectrum disorder have larger brains than those without the disorder does not explain why their brains became larger—that's a question that remains to be answered. Still, such work not only offers important clues to appropriate treatments but ultimately can also lead to a full understanding of a range of developmental phenomena.

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

LO 1.8 **Describe how the humanistic perspective explains lifespan development.**

The unique qualities of humans are the central focus of the humanistic perspective, the fourth of the major theories used by lifespan developmentalists. Rejecting the notion that our behavior is largely determined by unconscious processes, by learning from our environment, or by rational cognitive processing, the **humanistic perspective** contends that people have a natural capacity to make decisions about their lives and to control their behavior. According to this approach, each individual has the ability and motivation to reach more advanced levels of maturity, and people naturally seek to reach their full potential.

humanistic perspective
the theory contending that people have a natural capacity to make decisions about their lives and control their behavior

The humanistic perspective emphasizes *free will*, the ability of humans to make choices and come to decisions about their lives. Instead of relying on societal standards,

then, people are assumed to be motivated to make their own decisions about what they do with their lives.

Carl Rogers, who lived from 1902 to 1987, one of the major proponents of the humanistic perspective, suggested that all people have a need for positive regard that results from an underlying wish to be loved and respected. Because it is other people who provide this positive regard, we become dependent on them. Consequently, our view of ourselves and our self-worth is a reflection of how we think others view us (Rogers, 1971; Motschnig & Nykl, 2003; Malchiodi, 2012).

Rogers, along with another key figure in the humanistic perspective, Abraham Maslow (1908–1970), suggests that self-actualization is a primary goal in life. *Self-actualization* is a state of self-fulfillment in which people achieve their highest potential in their own unique way. Although the concept initially was deemed to apply to only a few select famous people, such as Eleanor Roosevelt, Abraham Lincoln, and Albert Einstein, later theorists expanded the concept to apply to any person who realizes his or her own potential and possibilities (Maslow, 1970; Sheldon, Joiner, & Pettit, 2003; Malchiodi, 2012).

ASSESSING THE HUMANISTIC PERSPECTIVE. Despite its emphasis on important and unique human qualities, the humanistic perspective has not had a major impact on the field of lifespan development. Its lack of influence is primarily due to its inability to identify any sort of broad developmental change that is the result of increasing age or experience. Still, some of the concepts drawn from the humanistic perspective, such as self-actualization, have helped describe important aspects of human behavior and are widely discussed in areas ranging from health care to business (Zalenski & Raspa, 2006; Elkins, 2009; Beitel et al., 2014).

The Contextual Perspective: Taking a Broad Approach to Development

LO 1.9 Describe how the contextual perspective explains lifespan development.

Although lifespan developmentalists often consider the course of development separately in terms of physical, cognitive, personality, and social factors, such a categorization has one serious drawback: In the real world, none of these broad influences occurs in isolation from any other. Instead, there is a constant, ongoing interaction between the different types of influence.

The **contextual perspective** considers the relationship between individuals and their physical, cognitive, personality, and social worlds. It suggests that a person's unique development cannot be properly viewed without seeing how that person is enmeshed within a rich social and cultural context. We'll consider two major theories that fall under this category: Bronfenbrenner's bioecological approach and Vygotsky's sociocultural theory.

contextual perspective
the theory that considers the relationship between individuals and their physical, cognitive, personality, and social worlds

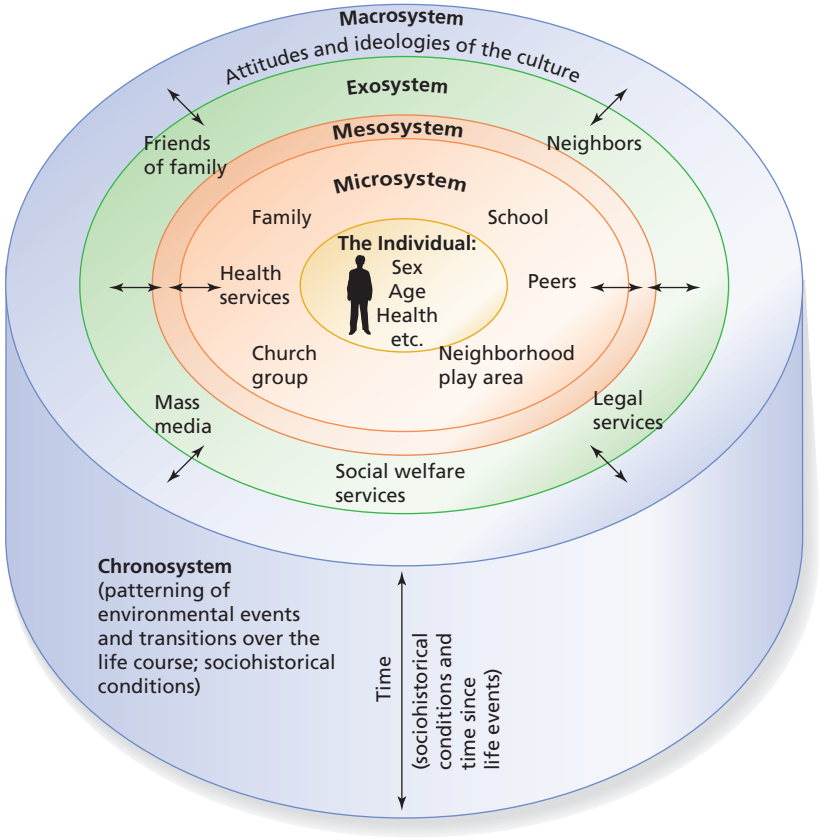
THE BIOECOLOGICAL APPROACH TO DEVELOPMENT. In acknowledging the problem with traditional approaches to lifespan development, psychologist Urie Bronfenbrenner (1989, 2000, 2002), who lived from 1917 to 2005, proposed an alternative perspective, called the bioecological approach. The **bioecological approach** suggests that five levels of the environment simultaneously influence individuals. Bronfenbrenner noted that we cannot fully understand development without considering how a person is influenced by each of these levels (illustrated in Figure 1-2).

bioecological perspective
the perspective suggesting that different levels of the environment simultaneously influence individuals

- The *microsystem* is the everyday, immediate environment in which children lead their daily lives. Homes, caregivers, friends, and teachers all are influences that are part of the microsystem. But the child is not just a passive recipient of these influences. Instead, children actively help construct the microsystem, shaping the immediate world in which they live. The microsystem is the level at which most traditional work in child development has been directed.

Figure 1-2 Bronfenbrenner's Approach to Development.

Urie Bronfenbrenner's bioecological approach to development offers five levels of the environment that simultaneously influence individuals: the macrosystem, exosystem, mesosystem, microsystem, and chronosystem.



- The *mesosystem* provides connections between the various aspects of the microsystem. Like links in a chain, the mesosystem binds children to parents, students to teachers, employees to bosses, and friends to friends. It acknowledges the direct and indirect influences that bind us to one another, such as those that affect a mother or father who has a bad day at the office and then is short-tempered with her or his son or daughter at home.
- The *exosystem* represents broader influences, encompassing societal institutions such as local government, the community, schools, places of worship, and the local media. Each of these larger institutions of society can have an immediate, and major, impact on personal development, and each affects how the microsystem and mesosystem operate. For example, the quality of a school will affect a child's cognitive development and potentially can have long-term consequences.
- The *macrosystem* represents the larger cultural influences on an individual. Society in general, types of governments, religious and political value systems, and other broad, encompassing factors are parts of the macrosystem. For example, the value a culture or society places on education or the family will affect the values of the people who live in that society. Children are part of a broader culture (such as Western culture) and are influenced by their membership in a particular subculture (for instance, being part of the Mexican American subculture).
- Finally, the *chronosystem* underlies each of the previous systems. It involves the way the passage of time, including historical events (such as the terrorist attacks in September 2001) and more gradual historical changes (such as changes in the number of women who work outside of the home), affect children's development.

The bioecological approach emphasizes the *interconnectedness of the influences on development.* Because the various levels are related to one another, a change in one part of the system affects other parts of the system. For instance, a parent's loss of a job (involving the mesosystem) has an impact on a child's microsystem.

Conversely, changes on one environmental level may make little difference if other levels are not also changed. For instance, improving the school environment may have a negligible effect on academic performance if children receive little support for academic success at home. Similarly, the bioecological approach illustrates that the influences among different family members are multidirectional. Parents don't just influence their child's behavior—children also influence their parents' behavior.

Finally, the bioecological approach stresses the importance of broad cultural factors that affect development. Researchers in lifespan development increasingly look at how membership in cultural and subcultural groups influences behavior.

Consider, for instance, whether you agree that children should be taught that their classmates' assistance is indispensable to getting good grades in school, or that they should definitely plan to continue their fathers' businesses, or that children should follow their parents' advice in determining their career plans. If you have been raised in the most widespread North American culture, you would likely disagree with all three statements, since they violate the premises of *individualism*, the dominant Western philosophy that emphasizes personal identity, uniqueness, freedom, and the worth of the individual.

By contrast, if you were raised in a traditional Asian culture, your agreement with the three statements would be considerably more likely. The reason? The statements reflect the value orientation known as *collectivism*—the notion that the well-being of the group is more important than that of the individual. People raised in collectivistic cultures tend to emphasize the welfare of the groups to which they belong, sometimes even at the expense of their own personal well-being.

The individualism–collectivism spectrum is one of several dimensions along which cultures differ. Similarly, the roles played by men and women also vary across cultures in significant ways. Such broad cultural values play an important role in shaping the ways people view the world and behave (Yu & Stiffman, 2007; Cheung et al., 2016; Sparrow, 2016).

Assessing the Bioecological Approach. Although Bronfenbrenner considered biological influences as an important component of the bioecological approach, ecological influences are central to the theory. Some critics argue that the perspective pays insufficient attention to biological factors. Still, the bioecological approach is of considerable importance to child development, suggesting as it does the multiple levels at which the environment affects children's development.

Denis Pogostin/Shutterstock

Pavel Losevsky/Fotolia

The bioecological approach to development focuses on the vast differences in environments in which children develop.

Ami Parikh/Shutterstock

According to Vygotsky, children can develop cognitively in their understanding of the world, and learn what is important in society, through play and cooperation with others.

VYGOTSKY'S SOCIOCULTURAL THEORY. To Russian developmentalist Lev Semenovich Vygotsky, who lived from 1896 to 1934, a full understanding of development was impossible without taking into account the culture in which people develop. Vygotsky's **sociocultural theory** emphasizes how cognitive development proceeds as a result of social interactions between members of a culture (Vygotsky, 1926/1997; Göncü & Gauvain, 2012; Fleer, González Rey, & Veresov, 2017).

Vygotsky argued that children's understanding of the world is acquired through their problem-solving interactions with adults and other children. As children play and cooperate with others, they learn what is important in their society and, at the same time, advance cognitively in their understanding of the world. Consequently, to understand the course of development, we must consider what is meaningful to members of a given culture.

More than most other theories, sociocultural theory emphasizes that development is a *reciprocal transaction* between the people in a child's environment and the child. Vygotsky believed that people and settings influence the child, who in turn influences the people and settings. This pattern continues in an endless loop, with children being both recipients of socialization influences and sources of influence. For example, a child raised with his or her extended family nearby will grow up with a different sense of family life than a child whose relatives live a considerable distance away. Those relatives, too, are affected by that situation and that child, depending on how close and frequent their contact is with the child.

sociocultural theory
the approach that emphasizes how cognitive development proceeds as a result of social interactions between members of a culture

Theorists who built on Vygotsky's work have used the example of *scaffolds*, the temporary platforms used by construction workers when building a structure, to describe how children learn. Scaffolding is the temporary support that teachers, parents, and others provide children as they are learning a task. As children become increasingly competent and master a task, the scaffolding can be withdrawn, allowing children to carry out the task on their own (Lowe et al., 2013; Peralta et al., 2013; Dahl et al., 2017).

Assessing Vygotsky's Theory. Sociocultural theory has become increasingly influential in the decades since Vygotsky's death. The reason is the growing acknowledgment of the central importance of cultural factors in development. Children do not develop in a cultural vacuum. Instead, their attention is directed by society to certain areas, and as a consequence, they develop particular kinds of skills that are an outcome of their cultural environment. Vygotsky was one of the first developmentalists to recognize and acknowledge the importance of culture, and—as today's society becomes increasingly multicultural—sociocultural theory is helping us to understand the rich and varied influences that shape development (Rogan, 2007; Frie, 2014; van der Veer & Yasnitsky, 2016).

Sociocultural theory is not without its critics, however. Some suggest that Vygotsky's strong emphasis on the role of culture and social experience led him to ignore the effects of biological factors on development. In addition, his perspective seems to minimize the role that individuals can play in shaping their own environment.

Evolutionary Perspectives: Our Ancestors' Contributions to Behavior

LO 1.10 Describe how the evolutionary perspective explains lifespan development.

One increasingly influential approach is the evolutionary perspective, the sixth and final developmental perspective that we will consider. The **evolutionary perspective** seeks to identify behavior that is the result of our genetic inheritance from our ancestors (Bjorklund, 2005; Goetz & Shackelford, 2006; Tomasello, 2011).

evolutionary perspective
the theory that seeks to identify behavior that is a result of our genetic inheritance from our ancestors

Evolutionary approaches have grown out of the groundbreaking work of Charles Darwin (1809–1882). In 1859, Darwin argued in his book *On the Origin of Species* that a process of natural selection creates traits in a species that are adaptive to its environment. Using Darwin's arguments, evolutionary approaches contend that our genetic inheritance determines not only such physical traits as skin and eye color, but certain personality traits and social behaviors as well. For instance, some evolutionary developmentalists suggest that traits such as shyness and jealousy are produced in part by genetic causes, presumably because they helped increase the survival rates of humans' ancient relatives (Easton, Schipper, & Shackelford, 2007; Buss, 2012; Geary & Berch, 2016).

Nina Leen/GettyImages

Konrad Lorenz, seen here with geese who from their birth have followed him, considered the ways in which behavior reflects inborn genetic patterns.

The evolutionary perspective draws heavily on the field of *ethology*, which examines the ways in which our biological makeup influences our behavior. A primary proponent of ethology was Konrad Lorenz (1903–1989), who discovered that newborn geese are genetically preprogrammed to become attached to the first moving object they see after birth. His work, which demonstrated the importance of biological determinants in influencing behavior patterns, ultimately led developmentalists to consider the ways in which human behavior might reflect inborn genetic patterns.

As we'll consider further in Chapter 2, the evolutionary perspective encompasses one of the fastest-growing areas within the field of lifespan development: behavioral genetics. *Behavioral genetics* studies the effects of heredity on behavior. Behavioral geneticists seek to understand how we might inherit certain behavioral traits and how the environment influences whether we actually display such traits. It also considers how genetic factors may produce psychological disorders such as schizophrenia (Bjorklund & Ellis, 2005; Rembis, 2009; Plomin et al., 2016).

ASSESSING THE EVOLUTIONARY PERSPECTIVE. There is little argument among lifespan developmentalists that Darwin's evolutionary theory provides an accurate description of basic genetic processes, and the evolutionary perspective is increasingly visible in the field of lifespan development. However, applications of the evolutionary perspective have been subjected to considerable criticism.

Some developmentalists are concerned that because of its focus on genetic and biological aspects of behavior, the evolutionary perspective pays insufficient attention to the environmental and social factors involved in producing children's and adults' behavior. Other critics argue that there is no good way to experimentally test theories derived from the evolutionary approach because they all happened so long ago. For example, it is one thing to say that jealousy helped individuals to survive more effectively and another thing to prove it. Still, the evolutionary approach has stimulated a significant amount of research on how our biological inheritance at least partially influences our traits and behaviors (Baptista et al., 2008; Del Giudice, 2015; Barbaro et al., 2017).

Why "Which Approach Is Right?" Is the Wrong Question

LO 1.11 Discuss the value of applying multiple perspectives to lifespan development.

We have considered the six major perspectives used in lifespan development—psychodynamic, behavioral, cognitive, humanistic, contextual, and evolutionary. These

Table 1-4 Major Perspectives on Lifespan Development

Perspective	Key Ideas About Human Behavior and Development	Major Proponents	Example
Psychodynamic	Behavior throughout life is motivated by inner, unconscious forces, stemming from childhood, over which we have little control.	Sigmund Freud, Erik Erikson	This view might suggest that a young adult who is overweight has a fixation in the oral stage of development.
Behavioral	Development can be understood through studying observable behavior and environmental stimuli.	John B. Watson, B. F. Skinner, Albert Bandura	In this perspective, a young adult who is overweight might be seen as not being rewarded for good nutritional and exercise habits.
Cognitive	Emphasis on how changes or growth in the ways people know, understand, and think about the world affect behavior.	Jean Piaget	This view might suggest that a young adult who is overweight hasn't learned effective ways to stay at a healthy weight and doesn't value good nutrition.
Humanistic	Behavior is chosen through free will and motivated by our natural capacity to strive to reach our full potential.	Carl Rogers, Abraham Maslow	In this view, a young adult who is overweight may eventually choose to seek an optimal weight as part of an overall pattern of individual growth.
Contextual	Development should be viewed in terms of the interrelationship of a person's physical, cognitive, personality, and social worlds.	Urie Bronfenbrenner, Lev Vygotsky	In this perspective, being overweight is caused by a number of interrelated factors in that person's physical, cognitive, personality, and social worlds.
Evolutionary	Behavior is the result of genetic inheritance from our ancestors; traits and behavior that are adaptive for promoting the survival of our species have been inherited through natural selection.	Influenced by early work of Charles Darwin, Konrad Lorenz	This view might suggest that a young adult might have a genetic tendency toward obesity because extra fat helped his or her ancestors to survive in times of famine.

perspectives are summarized in Table 1-4 and are applied to the case of a young adult who is overweight. It would be natural to wonder which of the six perspectives provides the most accurate account of human development.

For several reasons, this question is not entirely appropriate. For one thing, each perspective emphasizes somewhat different aspects of development. For instance, the psychodynamic approach emphasizes emotions, motivational conflicts, and unconscious determinants of behavior. In contrast, behavioral perspectives emphasize overt behavior, paying far more attention to what people *do* than to what goes on inside their heads, which is deemed largely irrelevant. The cognitive and humanistic perspectives take quite the opposite tack, looking more at what people *think* than at what they do. Finally, the evolutionary perspective focuses on how inherited biological factors underlie development.

Clearly, each perspective is based on its own premises and focuses on different aspects of development. Furthermore, the same developmental phenomenon can be looked at from a number of perspectives simultaneously. In fact, some lifespan developmentalists use an *eclectic* approach, drawing on several perspectives simultaneously.

We can think of the different perspectives as analogous to a set of maps of the same general geographical area. One map may contain detailed depictions of roads; another map may show geographical features; another may show political subdivisions, such as cities, towns, and counties; and still another may highlight particular points of interest, such as scenic areas and historical landmarks. Each of the maps is accurate, but each provides a different point of view and way of thinking. Although no one map is "complete," by considering them together, we can come to a fuller understanding of the area.

The various theoretical perspectives provide different ways of looking at development. Considering them together paints a fuller portrait of the myriad ways human beings change and grow over the course of their lives. However, not all theories and claims derived from the various perspectives are accurate. How do we choose among competing explanations? The answer is *research*, which we consider in the final part of this chapter.

Module 1.2 Review

LO 1.5 Describe how the psychodynamic perspective explains lifespan development.

The psychodynamic perspective looks primarily at the influence of internal, unconscious forces on development.

LO 1.6 Describe how the behavioral perspective explains lifespan development.

The behavioral perspective focuses on external, observable behaviors as the key to development.

LO 1.7 Describe how the cognitive perspective explains lifespan development.

The cognitive perspective focuses on the processes that allow people to know, understand, and think about the world.

LO 1.8 Describe how the humanistic perspective explains lifespan development.

The humanistic perspective concentrates on the theory that each individual has the ability and motivation to reach more advanced levels of maturity and that people naturally seek to reach their full potential.

LO 1.9 Describe how the contextual perspective explains lifespan development.

The contextual perspective focuses on the relationship between individuals and the social context in which they lead their lives.

LO 1.10 Describe how the evolutionary perspective explains lifespan development.

The evolutionary perspective seeks to identify behavior that is a result of our genetic inheritance from our ancestors.

LO 1.11 Discuss the value of applying multiple perspectives to lifespan development.

The various theoretical perspectives provide different ways of looking at development. An eclectic approach paints a more complete picture of the ways humans change over the life span.

Journal Writing Prompt

Applying Lifespan Development: What examples of human behavior have you seen that seem to have been inherited from our ancestors because they helped individuals survive and adapt more effectively? Why do you think they are inherited?

Research Methods

The Greek historian Herodotus wrote of an experiment conducted by Psamtik, the king of Egypt, in the seventh century B.C. Psamtik was eager to prove a cherished Egyptian belief, that his people were the oldest race on Earth. To test this notion, he developed a hypothesis: If a child was never exposed to the language of his elders, he would instinctively adopt the primal language of humanity—the original language of the first people. Psamtik was certain this language would be Egyptian.

For his experiment, Psamtik entrusted two Egyptian infants to the care of a herdsman in an isolated area. They were to be well looked after but not allowed to leave their cottage. And they were never to hear anyone speak a single word.

When Herodotus investigated the story, he learned that Psamtik sought to learn the first word the children would say. Herodotus claims the experiment worked, but not as Psamtik had hoped. One day, when the children were 2 years old, they greeted the herdsman with the word "Becos!" The herdsman didn't know this word but when the children continued to use it, he contacted Psamtik. The king sent for the children, who repeated the strange word to him. Psamtik did some research. Becos, it turned out, was "bread" in Phrygian. Psamtik had to conclude the Phrygians had preceded the Egyptians.

With the perspective of several thousand years, we can easily see the shortcomings—both scientific and ethical—in Psamtik's approach. Yet his procedure represents an improvement over mere speculation and as such is sometimes seen as the first developmental experiment in recorded history (Hunt, 1993).

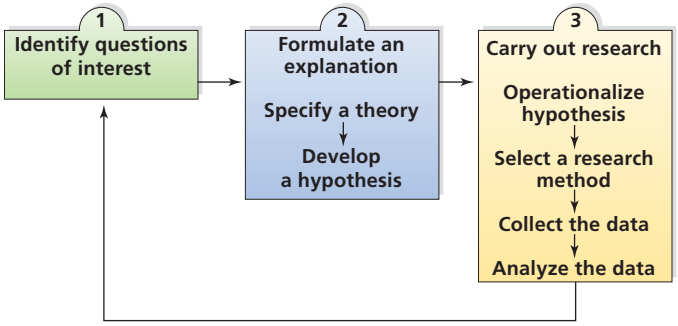
Theories and Hypotheses: Posing Developmental Questions

LO 1.12 Describe the role that theories and hypotheses play in the study of development.

Questions such as those raised by Psamtik drive the study of development. In fact, developmentalists are still studying how children learn language. Others are trying to find answers to such questions as: What are the effects of malnutrition on later intellectual

Figure 1-3 The Scientific Method.

A cornerstone of research, the scientific method is used by psychologists as well as researchers from all other scientific disciplines.



performance? How do infants form relationships with their parents, and does participation in day care disrupt such relationships? Why are adolescents particularly susceptible to peer pressure? Can mentally challenging activities reduce the declines in intellectual abilities related to aging? Do any mental faculties improve with age?

To answer such questions, developmentalists, like all psychologists and other scientists, rely on the scientific method. The **scientific method** is the process of posing and answering questions using careful, controlled techniques that include systematic, orderly observation and the collection of data. The scientific method involves three major steps: (1) identifying questions of interest, (2) formulating an explanation, and (3) carrying out research that either lends support to the explanation or refutes it (see Figure 1-3).

scientific method
the process of posing and answering questions using careful, controlled techniques that include systematic, orderly observation and the collection of data

The scientific method involves the formulation of **theories**, the broad explanations and predictions about phenomena of interest that scientists create. For instance, many people theorize that a crucial bonding period between parent and child takes place immediately after birth and is a necessary ingredient in forming a lasting parent–child relationship. Without such a bonding period, they assume, the parent–child relationship will be forever compromised (Furnham & Weir, 1996).

theories
explanations and predictions concerning phenomena of interest, providing a framework for understanding the relationships among an organized set of facts or principles

Developmental researchers use theories to form hypotheses. A **hypothesis** is a prediction stated in a way that permits it to be tested. For instance, someone who subscribes to the general theory that bonding is a crucial ingredient in the parent–child relationship might derive the more specific hypothesis that adopted children whose adoptive parents never had the chance to bond with them immediately after birth may ultimately have less secure relationships with their adoptive parents. Others might derive other hypotheses, such as that effective bonding occurs only if it lasts for a certain length of time, or that bonding affects the mother–child relationship but not the father–child relationship. (In case you're wondering: As we'll discuss in Chapter 3, these particular hypotheses have *not* been upheld; there are no long-term reactions to the separation of parent and child immediately after birth, even if the separation lasts several days.)

hypothesis
a prediction stated in a way that permits it to be tested

Choosing a Research Strategy: Answering Questions

LO 1.13 **Compare the two major categories of lifespan development research.**

Once researchers have formed a hypothesis, they must develop a research strategy for testing its validity. There are two major categories of research: correlational research and experimental research. **Correlational research** seeks to identify whether an association or relationship between two factors exists. As we'll see, correlational research cannot be used to determine whether one factor *causes* changes in the other. For instance, correlational research could tell us if there is an association between the number of minutes a mother and her newborn child are together immediately after birth and the quality of the mother–child relationship when the child reaches 2 years of age. Such correlational research indicates whether the two factors are *associated* or *related* to one another, but not whether the initial contact caused the relationship to develop in a particular way (Schutt, 2001).

correlational research
research that seeks to identify whether an association or relationship between two factors exists

In contrast, **experimental research** is designed to discover *causal* relationships between various factors. In experimental research, researchers deliberately introduce a change in a carefully structured situation in order to see the consequences of that change. For instance, a researcher conducting an experiment might vary the number of minutes that mothers and children interact immediately following birth, in an attempt to see whether the amount of bonding time affects the mother–child relationship.

experimental research
research designed to discover causal relationships between various factors