

Discovering the Life Span

Fourth Edition

—
Robert S. Feldman



	PRENATAL PERIOD (conception to birth)	INFANCY AND TODDLERHOOD (conception to 3 years)
PHYSICAL DEVELOPMENT	<p>GERMINAL STAGE (fertilization to 2 weeks):</p> <ul style="list-style-type: none"> • Cells divide rapidly. • Zygote attaches to uterine wall. <p>EMBRYONIC STAGE (2 to 8 weeks):</p> <ul style="list-style-type: none"> • Major organs and body systems grow. <p>FETAL STAGE (8 weeks to birth):</p> <ul style="list-style-type: none"> • Major organs become differentiated. • Fetus kicks and clenches fist, hears sounds outside the uterus. • Health can be affected by mother’s diet, health, age, or substance use. • Reflexes emerge. 	<ul style="list-style-type: none"> • Rapid height and weight gains. • Neurons grow and form interconnections in the brain. • Some functions have “critical periods” for normal development. • Infants wiggle, push upward, sit up, crawl, and eventually walk. • Infants reach, grasp, and pick up small objects. • Vision is 20/20 by 6 months, with depth perception and recognition of patterns, faces, shapes, and colors. • Infants hear a wide range of frequencies, localize sound, and make sound distinctions that underlie language development.
COGNITIVE DEVELOPMENT	<ul style="list-style-type: none"> • Intelligence is partly determined, and some psychological disorders may take root. • Cognitive functions can be affected by tobacco, alcohol, drug use by mother. 	<ul style="list-style-type: none"> • Infants begin to understand object permanence and “experiment” with the physical world. • Use of representations and symbols begins. • Information-processing speed increases. • Language develops rapidly through prelinguistic communication (babbling), use of single words to stand for whole ideas (holophrases), and telegraphic speech.
SOCIAL/ PERSONALITY DEVELOPMENT	<ul style="list-style-type: none"> • Some personality traits are partly determined genetically (e.g., neuroticism, extroversion). • Drug and alcohol use by mother can lead to irritability, difficulty dealing with multiple stimuli, and difficulty forming attachments in the child. 	<ul style="list-style-type: none"> • Infants exhibit different temperaments and activity levels. • Facial expressions appear to reflect emotions; facial expressions of others are understood. • Toddlers begin to feel empathy. • A style of attachment to others emerges.
THEORIES & THEORISTS		
Jean Piaget		Sensorimotor stage
Erik Erikson		Trust-versus-mistrust stage (birth–1½ yrs) Autonomy-versus-shame-and-doubt stage (1½–3 yrs)
Sigmund Freud		Oral and anal stages
Lawrence Kohlberg		Premoral period

PRESCHOOL PERIOD

(3 to 6 years)

MIDDLE CHILDHOOD

(6 to 12 years)

- Height and weight continue to increase rapidly.
- The body becomes less rounded and more muscular.
- The brain grows larger, neural interconnections continue to develop, and lateralization emerges.
- Gross and fine motor skills advance quickly. Children can throw and catch balls, run, use forks and spoons, and tie shoelaces.
- Children begin to develop handedness.

- Growth becomes slow and steady. Muscles develop, and "baby fat" is lost.
- Gross motor skills (biking, swimming, skating, ball handling) and fine motor skills (writing, typing, fastening buttons) continue to improve.

- Children show egocentric thinking (viewing world from their own perspective) and "centration," a focus on only one aspect of a stimulus.
- Memory, attention span, and symbolic thinking improve, and intuitive thought begins.
- Language (sentence length, vocabulary, syntax, and grammar) improves rapidly.

- Children apply logical operations to problems.
- Understanding of conservation (that changes in shape do not necessarily affect quantity) and transformation (that objects can go through many states without changing) emerge.
- Children can "decenter"— take multiple perspectives into account.
- Memory encoding, storage, and retrieval improve, and control strategies (meta-memory) develop.
- Language pragmatics (social conventions) and metalinguistic awareness (self-monitoring) improve.

- Children develop self-concepts, which may be exaggerated.
- A sense of gender and racial identity emerges.
- Children begin to see peers as individuals and form friendships based on trust and shared interests.
- Morality is rule-based and focused on rewards and punishments.
- Play becomes more constructive and cooperative, and social skills become important.

- Children refer to psychological traits to define themselves. Sense of self becomes differentiated.
- Social comparison is used to understand one's standing and identity.
- Self-esteem grows differentiated, and a sense of self-efficacy (an appraisal of what one can and cannot do) develops.
- Children approach moral problems intent on maintaining social respect and accepting what society defines as right.
- Friendship patterns of boys and girls differ. Boys mostly interact with boys in groups, and girls tend to interact singly or in pairs with other girls.

Preoperational stage

Concrete operational stage

Initiative-versus-guilt stage

Industry-versus-inferiority stage

Phallic stage

Latency period

Preconventional morality level

Conventional morality level

ADOLESCENCE

(12 to 20 years)

EARLY ADULTHOOD

(20 to 40 years)

PHYSICAL DEVELOPMENT

- Girls begin the adolescent growth spurt around age 10, boys around age 12.
- Girls reach puberty around age 11 or 12, boys around age 13 or 14.
- Primary sexual characteristics develop (affecting the reproductive organs), as do secondary sexual characteristics (pubic and underarm hair in both sexes, breasts in girls, deep voices in boys).

- Physical capabilities peak in the 20s, including strength, senses, coordination, and reaction time.
- Growth is mostly complete, although some organs, including the brain, continue to grow.
- For many young adults, obesity becomes a threat for the first time, as body fat increases.
- Stress can become a significant health threat.
- In the mid-30s, disease replaces accidents as the leading cause of death.

COGNITIVE DEVELOPMENT

- Abstract thought prevails. Adolescents use formal logic to consider problems in the abstract.
- Relative, not absolute, thinking is typical.
- Verbal, mathematical, and spatial skills improve.
- Adolescents are able to think hypothetically, divide attention, and monitor thought through meta-cognition.
- Egocentrism develops, with a sense that one is always being observed. Self-consciousness and introspection are typical.
- A sense of invulnerability can lead adolescents to ignore danger.

- As world experience increases, thought becomes more flexible and subjective, geared to adept problem solving.
- Intelligence is applied to long-term goals involving career, family, and society.
- Significant life events of young adulthood may shape cognitive development.

SOCIAL/ PERSONALITY DEVELOPMENT

- Self-concept becomes organized and accurate and reflects others' perceptions. Self-esteem grows differentiated.
- Defining identity is a key task. Peer relationships provide social comparison and help define acceptable roles. Popularity issues become acute; peer pressure can enforce conformity.
- Adolescents' quest for autonomy can bring conflict with parents as family roles are renegotiated.
- Sexuality assumes importance in identity formation. Dating begins.

- Forming intimate relationships becomes highly important. Commitment may be partly determined by the attachment style developed in infancy.
- Marriage and children bring developmental changes, often stressful. Divorce may result, with new stresses.
- Identity is largely defined in terms of work, as young adults consolidate their careers.

THEORIES & THEORISTS

Jean Piaget

Formal operations stage

Erik Erikson

Identity-versus-confusion stage

Intimacy-versus-isolation stage

Sigmund Freud

Genital stage

Lawrence Kohlberg

Postconventional morality level may be reached

MIDDLE ADULTHOOD

(40 to 65 years)

LATE ADULTHOOD

(65 years to death)

- Physical changes become evident. Vision declines noticeably, as does hearing, but less obviously.
- Height reaches a peak and declines slowly. Osteoporosis speeds this process in women. Weight increases, and strength decreases.
- Reaction time slows, but performance of complex tasks is mostly unchanged because of lifelong practice.
- Women experience menopause, with unpredictable effects. The male climacteric brings gradual changes in men's reproductive systems.

- Wrinkles and gray or thinning hair are marks of late adulthood. Height declines as backbone disk cartilage thins. Women are especially susceptible to osteoporosis.
- The brain shrinks, and the heart pumps less blood through the body. Reactions slow, and the senses become less acute. Cataracts and glaucoma may affect the eyes, and hearing loss is common.
- Chronic diseases, especially heart disease, grow more common. Mental disorders, such as depression and Alzheimer's disease, may occur.

- Some loss of cognitive functioning may begin in middle adulthood, but overall cognitive competence holds steady because adults use life experience and effective strategies to compensate.
- Slight declines occur in the efficiency of retrieval from long-term memory.

- Cognitive declines are minimal until the 80s. Cognitive abilities can be maintained with training and practice, and learning remains possible throughout the life span.
- Short-term memory and memory of specific life episodes may decline, but other types of memory are largely unaffected.

- People in middle adulthood take stock, appraising accomplishments against a "social clock" and developing a consciousness of mortality.
- Middle adulthood, despite the supposed "midlife crisis," usually is tranquil and satisfying. Individuals' personality traits are generally stable over time.
- Although marital satisfaction is usually high, family relationships can present challenges.
- The view of one's career shifts from outward ambition to inner satisfaction or, in some cases, dissatisfaction. Career changes are increasingly common.

- Basic personality traits remain stable, but changes are possible. "Life review," a feature of this period, can bring either fulfillment or dissatisfaction.
- Retirement is a major event of late adulthood, causing adjustments to self-concept and self-esteem.
- A healthy lifestyle and continuing activity in areas of interest can bring satisfaction in late adulthood.
- Typical circumstances of late adulthood (reduced income, the aging or death of a spouse, a change in living arrangements) cause stress.

Generativity-versus-stagnation stage

Ego-integrity-versus-despair stage

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Preface

To the Student

Welcome to the field of lifespan development! It's a discipline that's about you, about your family and those who came before you, and about those who may follow in your footsteps. It's about your genetic heritage, and it's about the world in which you were raised.

Lifespan development is a field that will speak to you in a personal way. 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, and our very selves.

But before we jump into the world of lifespan development, let's spend a little time getting to know this book and the way it presents the material. Knowing how the book is constructed will pay off in big ways.

Getting to Know the Book

You've probably already read a fair number of textbooks over the course of your college career. This one is different.

Why? Because it's written from your perspective as a student. Every word, sentence, paragraph, and feature in this book is included because it's meant to explain the field of lifespan development in a way that excites you, engages you with the content, and facilitates the study of the material. And by doing that, it maximizes your chances for not only learning the material and getting a good grade in your class, but also applying the material in a way that will improve your life.

The organization of the book is based on what psychologists know about how students study most effectively. The text is divided into short modules, nestled within chapters, with each module having several clearly demarcated subsections. By focusing your study in short sections, you're much more likely to master the material.

Similarly, the material is organized into *learning objectives*, abbreviated as *LO*. At the start of every subsection, you'll find them in the form of statements. It makes sense to pay particular attention to the learning objectives because they indicate the material that instructors most want you to learn and that they use to develop test questions.

The book also has a way of indicating which terms are most critical to your understanding of lifespan development. Key terms and concepts are printed in **boldface type**, and are defined in the margins. Less-critical terms and concepts are printed in *italics* and defined within the paragraph where they first appear, but not in the margin.

To further help you study, modules end with a "Review, Check, and Apply" section. The "Review" section includes a summary of the material in the module, organized by learning objective. There are also several "Check Yourself" questions, which require that you recall and understand the material to answer correctly. Finally, there's a question that requires you to apply the material in the chapter to some real-world issue. By answering the "Applying Lifespan Development" question, you're demonstrating a higher-order understanding related to critical thinking.

You'll also find several recurring features in every chapter. There are opening vignettes designed to illustrate how lifespan development is relevant to everyday life. There are boxes, called "From Research to Practice," which include recent research that is applied to current social issues, and "Cultural Dimensions" sections that highlight multicultural issues related to lifespan development.

Ever wish you could apply the theoretical material you're reading about in a textbook to your own life? The section called, "Becoming an Informed Consumer of Development," offers a variety of tips and guidelines, based on the chapter's theme, ranging from child-rearing tips to choosing a career and planning your retirement. By applying these to your life, you'll learn the diversity of what the field of lifespan development has to offer.

Finally, there are several features illustrating how the material is relevant from the perspectives of people in different roles and professions, including parents, educators, healthcare providers, and social workers. "From the Perspective of..." asks you questions designed to help you think critically about how lifespan development applies to someone working in a specific field, and "Putting It All Together"—a summary at the end of each chapter—will help you integrate the material in the modules and learn how it applies across a variety of dimensions.

A Last Word ...

I wrote this book for you. Not for your instructor, not for my colleagues, and not to see it sitting on my own bookshelf. I wrote this book as an opportunity to extend what I do in my own classes at the University of Massachusetts Amherst, and to reach a wider, and more diverse, set of students. For me, there's nothing more exciting as a college professor than to share my teaching and knowledge with as many students as possible.

I hope this book grabs your interest in lifespan development and shows you how it can apply to your own life and improve it. Let me know if it does, or anything else you'd

like to convey to me. I'd love to hear from you, and you can easily reach me at feldman@chancellor.umass.edu. In the meantime, enjoy your introduction to lifespan development.

To the Instructor

I've never met an instructor of a lifespan development course who didn't feel that he or she was fortunate to teach the course. The subject matter is inherently fascinating, and there is a wealth of information to convey that is at once intriguing and practical. Students come to the course with anticipation, motivated to learn about a topic that, at base, is about their own lives and the lives of every other human being.

At the same time, the course presents unique challenges. For one thing, the breadth of lifespan development is so vast that it is difficult to cover the entire field within the confines of a traditional college term. In addition, many instructors find traditional lifespan development texts too long. Students are concerned about the length of the texts and have trouble completing the entire book. As a result, instructors are often reluctant to assign the complete text and are forced to drop material, often arbitrarily.

Finally, instructors often wish to incorporate into their classes computer-based electronic media that promote understanding of key concepts and take advantage of students' capabilities using electronic media. Yet traditional lifespan development textbooks do little to integrate the electronic media with the book. Consequently, in most courses, the book and accompanying electronic media stand largely in isolation to one another. This lack of integration diminishes the potential impact of both traditional and electronic media and the advantages that an integration of the two could produce in terms of helping students engage with and learn the subject matter.

Discovering the Life Span, Fourth Edition, directly addresses these challenges. The book, which is based on the highly popular *Development Across the Life Span*, is some 25 percent shorter than traditional lifespan books. At the same time, it maintains the student friendliness that has been the hallmark of the original. It is rich in examples and illustrates the applications that can be derived from the research and theory of lifespan developmentalists.

The book uses a modular approach to optimize student learning. Each chapter is divided into three modules, and in turn each module is divided into several smaller sections. Consequently, rather than facing long, potentially daunting chapters, students encounter material that is divided into smaller, more manageable chunks. Of course, presenting material in small chunks represents a structure that psychological research long ago found to be optimum for promoting learning.

The modular approach has another advantage: It allows instructors to customize instruction by assigning

only those modules that fit their course. Each of the book's chapters focuses on a particular period of the life span, and within each chapter separate modules address the three main conceptual approaches to the period: physical development, cognitive development, and social and personality development. Because of the flexibility of this structure, instructors who wish to highlight a particular theoretical or topical approach to lifespan development can do so easily.

Finally, *Discovering the Life Span, Fourth Edition*, provides complete integration between the book and a huge array of media interactives and assessments in *Revel*, comprising videos, quizzes, and literally hundreds of activities that extend the text and make concepts come alive.

An Introduction to *Discovering the Life Span, Fourth Edition*

Discovering the Life Span, Fourth Edition—like its predecessor—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.

In a unique departure from traditional lifespan development texts, each chapter integrates the physical, cognitive, and social and personality domains within each chronological period. Chapters begin with a compelling story about an individual representing the age period covered by the chapter, and the chapter ends by refocusing on that individual and integrating the three domains.

The book also 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.

The book is designed to be user friendly. Written in a direct, conversational voice, it replicates 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. These features include:

- **CHAPTER-OPENING PROLOGUES.** Each of the chapters starts with an attention-grabbing account of an individual who is at the developmental stage covered by the chapter. The material in the prologue sets the stage for the chapter, and the material is addressed in the end of the chapter when the physical, cognitive, and social and personality aspects are integrated.
- **MODULE-OPENING VIGNETTE.** Modules (which are nestled within chapters) begin with short vignettes, describing an individual or situation that is relevant to the basic developmental issues being addressed in the module.
- **LEARNING OBJECTIVES.** Every subsection begins with a learning objective, clearly specifying what students are expected to master after reading and studying the material.
- **FROM RESEARCH TO PRACTICE.** Each chapter includes a box that describes current developmental research or research issues, applied to everyday problems.
- **CULTURAL DIMENSIONS.** Every chapter includes “Cultural Dimensions” sections incorporated into the text. These sections highlight issues relevant to today’s multicultural society. Examples of these sections include discussions about preschools around the world, gay and lesbian relationships, the marketing of cigarettes to the less advantaged, and race, gender, and ethnic differences in life expectancy.
- **BECOMING AN INFORMED CONSUMER OF DEVELOPMENT.** Every chapter includes information on specific uses that can be derived from research conducted by developmental investigators. For instance, the text provides concrete information on how to encourage children to become more physically active, help troubled adolescents who might be contemplating suicide, and planning and living a good retirement.
- **REVIEW, CHECK, AND APPLY SECTIONS.** At the end of each module are short recaps of the chapters’ main points, a series of questions on the chapter content, and a question oriented to apply the chapter content to the real world, keyed to the learning objectives.
- **“FROM THE PERSPECTIVE OF...” QUESTIONS.** Students will encounter frequent questions throughout the text designed to show the applicability of the material to a variety of professions, including education, nursing, social work, and healthcare providers.
- **RUNNING GLOSSARY.** Key terms are defined in the margins of the page on which the term is presented.
- **END-OF-CHAPTER INTEGRATIVE MATERIAL.** At the end of each chapter, the chapter-opening

prologue is recapped and addressed from the three domains of physical, cognitive, and social and personality development. In addition, questions address the prologue from the perspective of people such as parents, professional caregivers, nurses, and educators.

What’s New in the Fourth Edition?

The fourth edition of *Discovering the Life Span* has been extensively revised in response to the comments of dozens of reviewers. Among the major changes are the following:

Additions of New and Updated Material. The revision incorporates a significant amount of new and updated information. For instance, advances in areas such as behavioral genetics, brain development, evolutionary perspectives, and cross-cultural approaches to development receive expanded and new coverage. Overall, 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

- Update on importance of social learning theory
- Clarification of the scientific method and application of theories and hypotheses
- Update on application of research techniques
- Update on the first person conceived in vitro
- Control of children’s use of the Internet
- Effectiveness of DARE to prevent drug use
- Programs to prevent online harassment of adolescents
- New public policy issues involving war refugees, radicalization by terrorist groups

Chapter 2

- Updated figure on rising multiple births
- Update on procedure of amniocentesis
- New information on prenatal screenings
- New term: schizophrenia spectrum disorder
- Updated section on schizophrenia spectrum disorder
- Updated statistics on world hunger
- New information on “kangaroo care” for premature infants
- New figure on race and infant mortality
- New figure on Caesarean deliveries
- New figure on international infant mortality
- Replaced “mental retardation” with “intellectual disability”
- Updated Table 2-1 on genetic basis of selected disorders and traits

Chapter 3

- Update on Shaken Baby Syndrome statistics
- Updated figure on declining rates of sudden infant death syndrome (SIDS)
- New information on malnutrition in the United States
- New information on infantile amnesia
- Updated statistics on family life
- Clarified concept of sensitive periods
- Clarified that theory of mind continues development beyond infancy

Chapter 4

- Updated section on children's exposure to television
- New information on the Reggio Emilia preschool approach
- Expanded list of characteristics of high quality child care
- Added information on children with autism spectrum disorder and false belief
- New "From Research to Practice" box on children and lying
- Update on spanking never being an appropriate discipline
- Added to coverage of necessary vitamins and minerals
- New coverage of danger of lead in the water, referencing the situation in Flint, Michigan
- New material on genetically modified organisms (GMOs)
- New material on child sexual abuse

Chapter 5

- Update on frequency of asthma in children
- Update on childhood-onset fluency disorder or stuttering
- New "From Research to Practice" box on danger of inflated praise
- Update on Supreme Court ruling on gay marriage

Chapter 6

- Updated figure on marijuana use
- Updated figure on U.S. student math performance compared to other countries
- New "From Research to Practice" box on empathy in adolescence
- New material on transsexuals
- Added material on adolescent brain development and risk-taking behavior

Chapter 7

- Updated figure on murder rate in United States
- Update information on emerging adulthood
- Updated statistics on demographics of higher education
- New information on older students going to college
- Updated information on support for same-sex marriage
- Updated statistics on age of first marriage
- New statistics on singlehood
- Update information on women in the workforce
- New figure on relationship between exercise and mortality
- Changes in obesity statistics
- Taking a break as a coping mechanism

Chapter 8

- New "From Research to Practice" box on genetic testing for serious diseases
- New figure and statistics on feeling younger and age of death
- Updated information on remarriage
- New figure on domestic violence
- Update information on U.S. immigrants
- New figure on immigrants in the United States
- Refined description of crystallized and fluid intelligence

Chapter 9

- Updated figure on macular degeneration
- New information on economic well-being of the elderly
- New "From Research to Practice" box on age being a state of mind
- Updated statistics on population of skilled nursing facilities
- New ideas for a good retirement

Chapter 10

- New material on incomplete grief
- Additional material on Corr's tasks of grief
- Update on infant mortality
- Updated statistics on death during childhood
- Additional information on confronting death
- New "From Research to Practice" box on rising popularity of cremation
- New information on "incomplete grief"
- Additional states in which assisted suicide is legal

A Final Note

I am excited about this new edition of *Discovering the Life Span*. I believe its length, structure, and media and text integration will help students learn the material in a highly effective way. Just as important, I hope it will nurture an interest in the field that will last a lifetime.

Ancillaries

Discovering the Life Span is accompanied by a superb set of teaching and learning materials.

Revel™

Educational Technology Designed for the Way Today's Students Read, Think, and Learn.

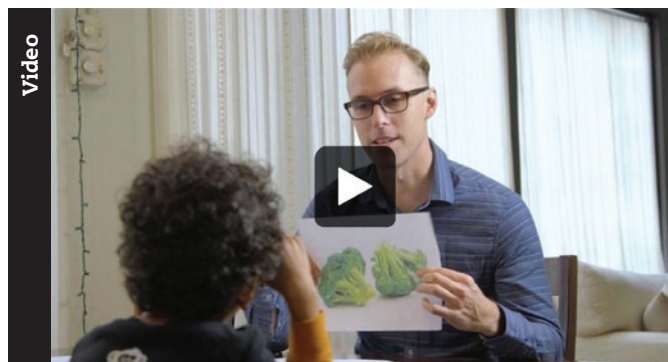
When students are engaged deeply, they learn more effectively and perform better in their courses. This simple fact inspired the creation of Revel: an immersive learning experience designed for the way today's students read, think, and learn. Built in collaboration with educators and students nationwide, Revel is the newest, fully digital way to deliver respected Pearson content.

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The fourth edition (ISBN: 0134641396) includes integrated videos and media content throughout, allowing students to explore topics more deeply at the point of relevancy.

Watch



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Print and Media Supplements

- **Instructor’s Resource Manual (ISBN: 0134556879).** Designed to make your lectures more effective and save you preparation time, this extensive resource gathers together the most effective activities and strategies for teaching your course. The *Instructor’s Resource Manual* includes learning objectives, key terms and concepts, self-contained lecture suggestions, and class activities for each chapter. Available for download via the Pearson Instructor’s Resource Center (www.pearsonhighered.com).
- **PowerPoint Lecture Slides (ISBN: 0134560981).** The PowerPoints 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).
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- **PowerPoint Slides for Photos, Figures, and Tables (ISBN: 0134556860).** These slides contain only the photos, figures, and line art from the textbook. Available for download on the Instructor’s Resource Center (www.pearsonhighered.com).
- **Test Bank (ISBN: 0134556887).** For the fourth edition, each question was checked to ensure that the correct answer was marked and the page reference was accurate. The test bank contains multiple-choice, true/false, and essay questions, each referenced to the relevant page in the book and correlated to chapter learning objectives and APA learning outcomes. An additional feature for the test bank is the identification of each question as factual, conceptual, or applied. This allows professors to customize their tests and to 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, or applied. The Test Bank is available for download via the Pearson Instructor’s Resource Center (www.pearsonhighered.com) or on the MyPsychLab® platform (www.MyPsychLab.com).
- **MyTest (ISBN: 0134556917).** This powerful assessment-generation program 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.
- **My Virtual Life (ISBN: 0205064264).** Raise your child. Live your life. MyVirtualLife is two simulations in one. The first simulation allows students to raise a child from birth to age 18 and monitor the effects of their parenting decisions over time. In the second simulation students make first-person decisions and see the impact of those decisions on their simulated future self over time. By incorporating physical, social, emotional, and cognitive development throughout the entire life span, MyVirtualLife helps students think critically as they apply their course work to their own virtual life. You can access MyVirtualLife within MyPsychLab (www.mypsychlab.com) or as a standalone product (www.myvirtuallife.com).
- **MyPsychLab (ISBN: 0134638484).** Available at www.mypsychlab.com, MyPsychLab is an online homework, tutorial, and assessment program that truly engages students in learning. It helps students better prepare for class, quizzes, and exams—resulting in

better performance in the course. It provides educators a dynamic set of tools for gauging individual and class performance:

- **Customizable** MyPsychLab is customizable. Instructors choose what students' course looks like. Homework, applications, and more can easily be turned on and off.
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- **Pearson Teaching Films Lifespan Development Video (ISBN: 0205656021).** This video engages students and brings to life a wide range of topics spanning prenatal 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 *Discovering the Life Span*, Fourth Edition.

- ***Current Directions in Developmental Psychology (ISBN: 0205597505).*** Readings from the American Psychological Society. This exciting reader includes more than 20 articles that have been carefully selected for the undergraduate audience, and taken from the 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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Robert S. Feldman
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About the Author



Robert S. Feldman is Professor of Psychological and Brain Sciences and Deputy Chancellor of the University of Massachusetts Amherst. He has also served as Dean of the College of Social and Behavioral Sciences and is currently serving as Interim Dean of the College of Education at the University of Massachusetts.

A recipient of the College Distinguished Teacher Award, he teaches classes ranging in size from 10 to nearly 500 students. During the course of more than two decades as a college instructor, he has taught both undergraduate and graduate courses at Mount Holyoke College, Wesleyan University, and Virginia Commonwealth University in addition to the University of Massachusetts Amherst.

A Fellow of the American Psychological Association, American Association for the Advancement of Science, and the Association for Psychological Science, Professor Feldman received a B.A. with High Honors from Wesleyan University (and from which he received the Distinguished Alumni Award). He has an MS and Ph.D. from the University of Wisconsin–Madison. He is a winner of a Fulbright Senior Research Scholar and Lecturer award, and he has written more

than 200 books, book chapters, and scientific articles. He has edited *Development of Nonverbal Behavior in Children* and *Applications of Nonverbal Behavioral Theory and Research* and co-edited *Fundamentals of Nonverbal Behavior*. He is also author of *Development Across the Life Span*, *Understanding Psychology*, and *P.O.W.E.R. Learning: Strategies for Success in College and Life*. His books have been translated into many languages, including Spanish, French, Portuguese, Dutch, Chinese, Korean, German, Arabic, Tagalog, and Japanese, and more than 2.5 million students have used his textbooks.

Professor Feldman's research interests include honesty and deception in everyday life, work that he described in *The Liar in Your Life*, a trade book published in 2009. His research has been supported by grants from the National Institute of Mental Health and the National Institute on Disabilities and Rehabilitation Research. He is also past president of the Federation of Associations in the Behavioral and Brain Sciences Foundation, an organization that promotes the social sciences, a member of the Board of the Social Psychology Network, and is a member of the Board and Executive Committee 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. He and his wife, a psychologist, live in western Massachusetts in a home overlooking the Holyoke Mountain Range.

Chapter 1

Introduction

The Ruiz “Happy Birthday Family Reunion” was a big success. Marco Ruiz’s grandfather, Geraldo, who would turn 90 tomorrow, was in his glory at the center of the festivities.

Marco’s wife, Louise, had hatched the reunion idea while planning next summer’s wedding of their youngest daughter Eva. Eva’s husband-to-be, Peter, would be the first African American in the family, and Louise’s idea was to introduce him early so his ethnicity would be old news by the wedding day.

Louise’s brainstorm was apparently working, given the happy din of the huge throng in attendance. Marco took a quiet census: his father, Damiano, and Louise’s mom and dad, plus a gaggle of uncles, aunts, siblings, and cousins from his and Louise’s families. One generation down, he counted his children and their families, and virtual busloads of nieces and nephews with their families, down to the youngest child, the daughter of Marco’s niece Terri and her husband Tony, 4-year-old Alicia Wei-Li Saucedo, Geraldo’s great-great-granddaughter, who had been adopted from China.

Marco watched as Grandpa Geraldo hugged and chatted happily with Alicia. There in one small picture frame was the story of the five generations of Grandpa’s family, from 4 to 90.

Marco thought to himself: What is Grandpa making of all this? Is he wondering how he spawned all these different personalities? Is he speculating about their careers, their futures? Is he looking for traces of his stubbornness and short temper, his generosity and open-mindedness? Does he find in this gathering the vast ambitions that he had as a boy? Will any of them be—at last—the athlete that he never was, or will they be writers and thinkers like him and his children?

Marco smiled at Louise’s idea of “integrating” Peter into the family. Peter’s skin color wasn’t even an issue. The main stories were that Marco’s nephew Ted was here with his fiancé Tom, and his niece Clarissa had her fiancée Rosa on her arm. Marco’s smile grew broader. Let Grandpa wonder where this latest family trend came from.

Lifespan development is a diverse and growing field with a broad focus and wide applicability. It covers the entire life span of the individual from birth to death as it examines the ways in which people develop physically, intellectually, and socially. It asks and attempts to answer questions about the ways in which people change and remain the same over their years of life.

Many of the questions that developmentalists ask are, in essence, the scientist’s version of the questions that parents ask about their children and themselves: How the genetic legacy of parents plays out in their children; how children learn; why they make the choices they make; whether personality characteristics are inherited and whether they change or are stable over time; how a stimulating environment affects development; and many others. To pursue these answers, of course, developmentalists use the highly structured, formal scientific method, whereas parents mostly use the informal strategy of waiting, observing, engaging with, and loving their kids.

In this chapter, we will introduce the field of lifespan development. We first discuss the breadth of the field, both in the range of years it covers and in the topics it addresses, and we look at the major theoretical perspectives that have examined those topics. We also describe the key features of the scientific method, the main approach that scientists take to answering questions of interest.

Module 1.1 *Beginnings*

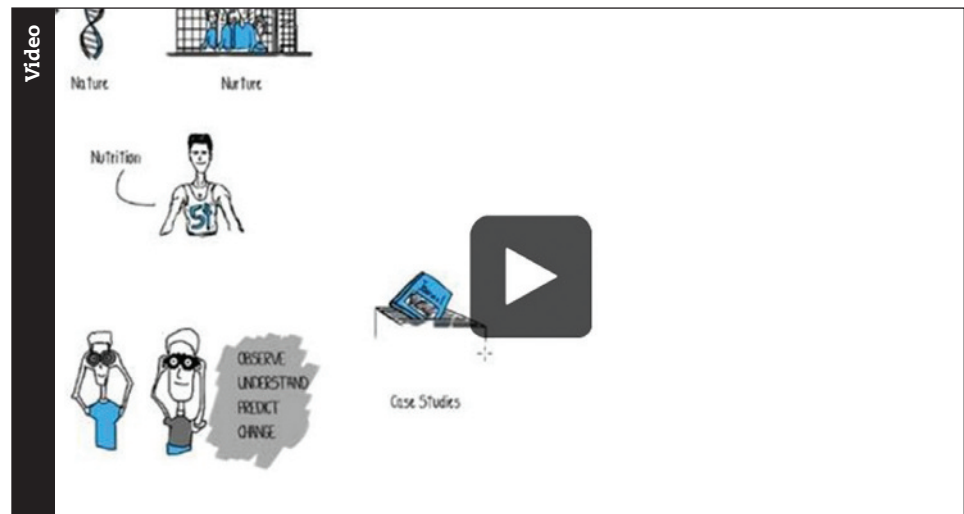
Nature vs. nurture: Which has the greater influence?

Module 1.2 *Theoretical Perspectives on Lifespan Development*

Is one right and one wrong?

Module 1.3 *Research Methods*

What kind of research could you conduct using Marco's five-generation family?

Watch SKETCHNOTE VIDEO: INTRODUCTION TO LIFESPAN DEVELOPMENT

Module 1.1

Beginnings

New Conceptions

What if for your entire life, the image that others held of you was colored by the way in which you were conceived?

In some ways, that's what it has been like for Louise Brown, who 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.

Brown 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.

As a child, Brown sometimes felt completely alone. "I thought it was something peculiar to me," she recalled. But as she grew older, her isolation declined as more and more children were born in the same manner.

In fact, today Brown is hardly isolated. More than 5 million babies have been born using the procedure, which has become almost routine. And at the age of 28, Brown became a mother herself, giving birth to a baby boy named Cameron—conceived, incidentally, the old-fashioned way (Falco, 2012; ICMRT, 2012).



Brown's conception may have been novel, but her development since then has followed a predictable pattern. Although the specifics of our development vary, the broad strokes set in motion in that test tube more than three decades

ago are remarkably similar for all of us. Michael Phelps, the Pope, and you—all are traversing the territory known as lifespan development.

Brown's conception is just one of the brave new worlds of the day. Issues that affect human development range from cloning to poverty to the prevention of AIDS. Underlying these are even more fundamental issues: How do we develop physically? How does our understanding of the world change throughout our lives? And how do our personalities and social relationships develop as we move through the life span?

These questions and many others are central to lifespan development. The field encompasses a broad span of time and a wide range of areas. Consider the range of interests that different specialists might focus on when considering Brown:

Lifespan development researchers who investigate behavior at the biological level might ask if Brown's functioning before birth was affected by her conception outside the womb.

- Specialists in lifespan development who study genetics might examine how the genetic endowment from Brown's parents affects her later behavior.
- For lifespan development specialists who investigate the ways thinking changes over the course of life, Brown's life might be examined in terms of how her understanding of the nature of her conception changed as she grew older.

- Researchers in lifespan development who focus on physical growth, might consider whether her growth rate differed from children conceived more traditionally.

Lifespan development experts who specialize in the social world and social relationships might look at the ways that Brown interacted with others and the kinds of friendships she developed.

Although their interests take many forms, these specialists share one concern: understanding the growth and change that occur during life. Taking many different approaches, developmentalists study how both our biological inheritance from our parents and the environment in which we live jointly affect our future behavior, personality, and potential as human beings.

Whether they focus on heredity or environment, all developmental specialists acknowledge that neither one alone can account for the full range of human development. Instead, we must look at the interaction of heredity and environment, attempting to grasp how both underlie human behavior.

In this module, 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 it examines. We also survey the main 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 at the way an infant tightly grips your finger with tiny, perfectly formed hands? Or marveled at how a preschooler methodically draws a picture? Or at the way an adolescent can make involved decisions about whom to invite to a party or the ethics of downloading music files? Or the way a middle-aged politician can deliver a long, flawless speech from memory? Or what makes a grandfather at 80 so similar to the father he was at 40?

If you've ever wondered about such things, you are asking the kinds of questions that scientists in the field of lifespan development pose. **Lifespan development** is the field of study that examines patterns of growth, change, and stability in behavior that occur throughout the life span.

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 by applying scientific methods. They develop theories about development and use methodical, scientific techniques to validate the accuracy of their assumptions systematically.

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

As developmental specialists focus on change during the life span, they also consider stability. 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 from the moment of conception to the day of death, with people changing in some ways right up to the end of their lives and in other ways exhibiting remarkable stability.

lifespan development

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

They believe that no single period governs all development, but instead that people maintain the capacity for substantial growth and change throughout their lives.

Characterizing Lifespan Development: The Scope of the Field

LO 1.1 Describe the scope of the field of lifespan development.

Clearly, the definition of lifespan development is broad and the scope of the field is extensive. Typically, lifespan development specialists cover several diverse areas, choosing 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, whereas another might look at how athletes' physical performance declines during adulthood (Fell & Williams, 2008; Muiños & Ballesteros, 2014).

Other developmental specialists examine **cognitive development**, seeking to understand how growth and change in intellectual capabilities influence a person's behavior. Cognitive developmentalists examine learning, memory, problem solving, and intelligence. For example, specialists in cognitive development might want to see how problem-solving skills change over the course of life, or if cultural differences exist in the way people explain their academic successes and failures, or how traumatic events experienced early in life are remembered later in life (Penido et al., 2012; Feldman, 2013).

Finally, some developmental specialists focus on personality and social development. **Personality development** is the study of stability and change in the characteristics that differentiate one person from another over the life span. **Social development** is the way in which individuals' interactions and relationships with others 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 (Evans, Boxhill, & Pinkava, 2008; Lansford, 2009; Tine, 2014). These four major topic areas—physical, cognitive, social, and personality development—are summarized in Table 1-1.

AGE RANGES AND INDIVIDUAL DIFFERENCES In addition to choosing 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 (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 60); and late adulthood (ages 60 to death).

It's important to keep in mind that these periods are social constructions. A *social construction* is a shared notion of reality that is widely accepted but is a function of society and culture at a given time. Thus, the age ranges within a period—and even the periods themselves—are in many ways arbitrary and culturally derived. For example, we'll see how the concept of childhood as a special period did not even exist during the seventeenth century—children were seen then simply as miniature adults. Furthermore, although some periods have a clear-cut boundary (infancy begins with birth, the preschool period ends with entry into public 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 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 college. For them, more substantial changes are likely to occur when they leave college around age 22. Furthermore, in some cultures adulthood starts much earlier, as soon as a child can begin full-time work.

In fact, some developmentalists have proposed entirely new developmental periods. For instance, psychologist Jeffrey Arnett argues that adolescence extends into

physical development

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

cognitive development

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

personality development

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

social development

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

Table 1-1 Approaches to Lifespan Development

Orientation	Defining Characteristics	Examples of Questions Asked*
Physical development	Emphasizes how brain, nervous system, muscles, sensory capabilities, and needs for food, drink, and sleep affect behavior	<ul style="list-style-type: none"> • What determines the sex of a child? (2.1) • What are the long-term results of premature birth? (2.3) • What are the benefits of breast milk? (3.1) • What are the consequences of early or late sexual maturation? (6.1) • What leads to obesity in adulthood? (7.1) • How do adults cope with stress? (8.1) • What are the outward and internal signs of aging? (9.1) • How do we define death? (10.1)
Cognitive development	Emphasizes intellectual abilities, including learning, memory, problem solving, and intelligence	<ul style="list-style-type: none"> • What are the earliest memories that can be recalled from infancy? (3.2) • What are the intellectual consequences of watching television? (4.2) • Do spatial reasoning skills relate to music practice? (4.2) • Are there benefits to bilingualism? (5.2) • How does an adolescent's egocentrism affect his or her view of the world? (6.2) • Are there ethnic and racial differences in intelligence? (5.2) • How does creativity relate to intelligence? (7.2) • Does intelligence decline in late adulthood? (9.2)
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 lifetime	<ul style="list-style-type: none"> • Do newborns respond differently to their mothers than to others? (2.3) • What is the best procedure for disciplining children? (4.3) • When does a sense of gender identity develop? (4.3) • How can we promote cross-race friendships? (5.3) • What are the causes of adolescent suicide? (6.3) • How do we choose a romantic partner? (7.3) • Do the effects of parental divorce last into old age? (9.3) • Do people withdraw from others in late adulthood? (9.3) • What are the emotions involved in confronting death? (10.1)

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

emerging adulthood, a period beginning in the late teenage years and continuing into the mid-20s. 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; Syed & Seiffge-Krenke, 2013; Sumner, Burrow, & Hill, 2015; Arnett, 2016).

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

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 may focus on physical development during the prenatal period, and others during adolescence. Some might specialize in social development during the preschool years, whereas others look at social relationships in late adulthood. And 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 physical, cognitive, social, and personality development.

Cohort and Other Influences on Development: Developing With Others in a Social World

LO 1.2 Describe cohorts, and explain how they influence development.

Bob, born in 1947, is a baby boomer; he was born soon after the end of World War II, when returning soldiers caused an enormous bulge in the birth rate. He was an adolescent at the height of the Civil Rights movement and protested against the Vietnam War. His mother, Leah, was born in 1922; her generation passed its



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.

childhood and teenage years in the shadow of the Depression. Bob's son, Jon, was born in 1975. Now building a career and starting a 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.

cohort

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

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 resulting from the AIDS virus) work similar influences on members of a particular cohort (Mitchell, 2002; Dittman, 2005; Twenge, Gentile, & Campbell, 2015).

Cohort effects are an example of *history-graded influences*, 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 as a result of the attack. In fact, the specter of terrorism is a history-graded influence that is common to people living in the United States today (Bonanno et al. 2006; Breslau, Bohnert, & Koenen, 2010; Park, Riley, & Snyder, 2012).

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 previous cohorts before the appearance of the Internet?

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 about the same time in 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.

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 white and nonwhite children, especially if one lives in poverty and the other in affluence (Rose et al., 2003).

Finally, *non-normative life events* are specific, atypical events that occur in a particular 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 has experienced a significant non-normative life event. (See the *Cultural Dimensions* box.)

Cultural Dimensions

How Culture, Ethnicity, and Race Influence Development

Mayan mothers in Central America are certain that almost constant contact between themselves and their infant children is necessary for good parenting, and they are physically upset if contact is not possible. They are shocked when they see a North American mother lay her infant down, and they attribute the baby's crying to the poor parenting of the North American (Morelli et al., 1992).

What are we to make of the two views of parenting depicted in this passage? Is one right and the other wrong? Probably not, if we take cultural context into consideration. Different cultures and subcultures have their own views of

appropriate and inappropriate childrearing, just as they have different developmental goals for children (Huijbregts et al., 2009; Chen, Chen, & Zheng, 2012; Eeckhaut et al., 2014).

Clearly, to understand development, developmentalists must take into consideration broad cultural factors, such as an orientation toward individualism or collectivism, as well as finer ethnic, racial, socioeconomic, and gender differences. If they succeed in doing this, not only can they achieve 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 humans' 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?

To fully understand development, then, we need to take the complex issues associated with human diversity into account. In fact, 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 ones that are culturally determined. In the years ahead, then, it is likely that lifespan development will move from a discipline that primarily focuses on North American and European development to one that encompasses development around the globe (Fowers & Davidov, 2006; Matsumoto & Yoo, 2006; Kloep et al., 2009).

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

Lifespan development is a decades-long journey through shared milestones, with many individual routes along the way. For developmentalists, the variations in lifespan development raise many questions. What are the best ways to think about the enormous changes that a person undergoes from before birth to death? How important is chronological age? Is there a clear timetable for development? How can one begin to find common threads and patterns?

These questions have been debated since lifespan development became established as a separate field in the late nineteenth and early twentieth centuries, though a fascination with the nature and course of humans' development can be traced back to the ancient Egyptians and Greeks.

In this section we examine four of the most important—and continuously argued—issues in the field of lifespan development. We also consider the resolutions to which researchers have come regarding these issues.

Continuous Change Versus Discontinuous Change

LO 1.3 Explain the differences between continuous change and 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; the underlying developmental processes remain the same over the life span. In this view changes are a matter of degree, not of kind—like changes in a person's height. Some theorists suggest that changes in people's thinking abilities are also continuous, building on gradual improvements rather than developing entirely new processing capabilities.

In contrast, others see development as primarily a matter of **discontinuous change**, occurring in distinct stages. Each stage brings about behavior that is assumed to be qualitatively different from behavior at previous stages. Consider cognitive development again. Some cognitive developmentalists suggest that our

continuous change

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

discontinuous change

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

thinking changes in fundamental ways as we develop, not just quantitatively but qualitatively.

Most developmentalists agree that it makes little sense to take an either-or position on this issue. Although many types of developmental change are continuous, others are clearly discontinuous (Heimann, 2003; Gumz et al., 2010; Burgers, 2016).

Critical and Sensitive Periods: Gauging the Impact of Environmental Events

LO 1.4 Distinguish between critical periods and sensitive periods.

If a woman comes down with a case of rubella (German measles) in the 11th week of pregnancy, the consequences for the child she is carrying—possible blindness, deafness, and heart defects—can be devastating. However, if she comes down with the same strain of rubella in the 30th week of pregnancy, damage to the child is unlikely.

The differing outcomes 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 are necessary for development to proceed normally (Uylings, 2006).

Although early specialists in lifespan development placed great emphasis on critical periods, recent thinking suggests that individuals are more malleable, particularly in the domain of personality and social development. For instance, rather than suffering permanent damage from a lack of certain early social experiences, there is increasing evidence that people can use later experiences to help overcome previous deficits.

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 environments. In contrast to a critical period, however, the absence of those stimuli during a sensitive period does not always produce irreversible consequences.

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 previous deficits. In other words, the concept of sensitive period recognizes the plasticity of developing humans (Hooks & Chen, 2008; Steele et al., 2013; Hartley & Lee, 2015).

Lifespan Approaches Versus a Focus on Particular Periods

LO 1.5 Describe how the study of lifespan development expanded.

Early developmentalists tended to focus their attention on infancy and adolescence, largely to the exclusion of other parts of the life span. Today, however, developmentalists believe the entire life span is important, largely because developmental growth and change continue during every part of life—as we'll discuss throughout this book.

Furthermore, to fully understand the social influences on a person of a given age, we need to understand the person's social environment—the people who in large measure provide 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 and an experienced 37-year-old mother will provide parental influences of different sorts. Consequently, infant development is in part an outgrowth of adult development.

Additionally, 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, whereas others decline. For example,

critical period

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

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

vocabulary tends to grow throughout childhood and continue through most of adulthood, but certain physical abilities, like reaction time, improve until early and middle adulthood, and then begin to decline (Baltes, 2003; Ghisletta et al., 2010; Cid-Fernández, Lindín, & Díaz, 2016).

The Relative Influence of Nature and Nurture on Development

LO 1.6 Summarize the influence of nature and nurture on development.

One of the enduring questions of development involves how much of people's behavior is the result of genetics (nature) and how much to the physical and social environment (nurture) (Wexler, 2006).

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 created at conception to the billions of cells that make up a fully formed human. Nature 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.

maturation
the predetermined unfolding of genetic information

In contrast, *nurture* refers to the environmental influences that shape behavior. Some 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 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 societal factors, such as the socioeconomic circumstances in which people find themselves.

Although developmentalists reject the notion that behavior is the sole result of either nature or nurture, the nature–nurture question can cause heated debate. Take, for instance, intelligence. If intelligence is primarily determined by heredity and 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 home stimulation, then an improvement in social conditions could cause intelligence to increase.

Clearly, neither nature nor nurture stands alone in most developmental matters. 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 also an indirect influence in shaping children's *environments*. For example, children who cry a great deal—a trait that may be produced by genetic factors—may influence their environment by making their parents rush to comfort them whenever they cry. The parents' responsiveness to their children's genetically determined behavior becomes an environmental influence on the children's subsequent development.

Similarly, although our genetic background orients us toward particular behaviors, those behaviors will not necessarily occur without an appropriate environment. People with similar genetic backgrounds (such as identical twins) may behave in different ways; and people with highly dissimilar genetic backgrounds can behave quite similarly to one another in certain areas (Gangestad, 2010; Barnes & Boutwell, 2013; Segal et al., 2015).

In sum, the nature–nurture question is challenging. Ultimately, we should consider the two sides of the issue as ends of a continuum, with particular behaviors falling somewhere between the ends. The same can be said of 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 (Deater-Deckard & Cahill, 2006; Rutter, 2006; Selig & Lopez, 2016).