A Child's World

INFANCY THROUGH ADOLESCENCE

Thirteenth Edition

MARTORELL   PAPALIA   FELDMAN

A Child's World

Infancy through Adolescence

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A CHILD'S WORLD: INFANCY THROUGH ADOLESCENCE, THIRTEENTH EDITION

Diane E. Papalia As a professor, Diane E. Papalia taught thousands of undergraduates at the University of Wisconsin–Madison. She received her bachelor's degree, majoring in psychology, from Vassar College and both her master's degree in child development and family relations and her PhD in life-span developmental psychology from West Virginia University. She has published numerous articles in such professional journals as *Human Development, International Journal of Aging and Human Development, Sex Roles, Journal of Experimental Child Psychology,* and *Journal of Gerontology.* Most of these papers have dealt with her major research focus, cognitive development from childhood through old age. She is especially interested in intelligence in old age and factors that contribute to the maintenance of intellectual functioning in late adulthood. She is a Fellow in the Gerontological Society of America. She is the coauthor of *Human Development,* now in its eleventh edition, with Sally Wendkos Olds and Ruth Duskin Feldman; of *Adult Development and Aging,* now in its third edition, with Harvey L. Sterns, Ruth Duskin Feldman, and Cameron J. Camp; and of *Child Development: A Topical Approach* with Dana Gross and Ruth Duskin Feldman.

Gabriela Alicia Martorell was born in Seattle, Washington, but moved as a toddler to Guatemala. At eight, she moved back to the United States and lived in Northern California until leaving for her undergraduate training at University of California, Davis. After obtaining her BS in Psychology, she earned her PhD in Developmental and Evolutionary Psychology at University of California, Santa Barbara. Since that time, she has served a number of learning institutions including Portland State University, Norfolk State University, and her current full-time position at Virginia Wesleyan College. Gabi has taught graduate and undergraduate courses in introductory psychology, research methods, lifespan human development, infant development, child development, adolescent development, adulthood and aging, cultural issues in psychology, evolutionary psychology, developmental psychopathology, and community-based learning courses in Early Childhood Education and Adult Development and Aging. She is committed to teaching, mentoring and advising. She is currently conducting research on attachment processes in immigrant Latino/a adolescents that was funded by the Virginia Foundation for Independent Colleges, and is Co-Investigator for a National Science Foundation grant focused on student retention and success in science, technology, engineering, and math. She lives in Virginia with her husband Michael, daughters Amalia and Clara, and two dogs.

Ruth Duskin Feldman is an award-winning writer and educator. With Diane E. Papalia and Sally Wendkos Olds, she coauthored the fourth, seventh, eighth, ninth, tenth, and eleventh editions of *Human Development* and the eighth, ninth, tenth, and eleventh editions of *A Child's World.* She also is coauthor of *Adult Development and Aging* and of *Child Development: A Topical Approach.* A former teacher, she has developed educational materials for all levels from elementary school through college and has prepared ancillaries to accompany the Papalia-Olds books. She is author or coauthor of four books addressed to general readers, including *Whatever Happened to the Quiz Kids? Perils and Profits of Growing Up Gifted,* republished in 2000 as an Authors Guild Back-in-Print edition of iUniverse. She has written for numerous newspapers and magazines and has lectured extensively and made national and local media appearances throughout the United States on education and gifted children. She received her bachelor's degree from Northwestern University, where she was graduated with highest distinction and was elected to Phi Beta Kappa.

To my husband
who picked up the slack for me
on all the long working evenings
and weekends, mostly without complaint.

To my daughters,
for joyfully and furiously bringing to life
the magic of development right in
front of me, every day.

And last to my dogs, for parking themselves
under the table to be my footrests while I worked
and for providing me with a reason to get outside
at least once a day to stretch my legs.

To our parents,
Madeline and Edward Papalia,
Leah and Samuel Wendkos,
and Boris and Rita Duskin,
for their unfailing love, nurturance, and
confidence in us, and for their abiding conviction
that childhood is a wondrous time of life.

And to our children,
Anna Victoria,
Nancy, Jennifer, and Dorri,
Steven, Laurie, and Heidi,

And our grandchildren,
Stefan, Maika, Anna, Lisa, and Nina,
Daniel, Emmett, Rita, Carol, Eve, Isaac, Delilah, and Raphael,
who have helped us revisit childhood
and see its wonders and challenges.

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A Child's World: fostering your students' success. Informed by real student data and supported by real infants and children, *A Child's World* takes a practical approach to research and recognizes that just as every child develops in their own way, your students also learn in their own ways. With our adaptive, personalized learning program, LearnSmart, students are guided toward success on their terms. With integrated resources like Milestones of Child Development and short author tutorials on some of the most challenging learning objectives, *A Child's World* makes a difference for your students.

A Powerful Revision Based on Real Data from Real Students

Here's how it used to be: The revision process for a new edition typically began with asking several dozen instructors what they would change and what they would keep. Also, experts in the field were asked to provide comments that point out new material to add and dated material to remove. Using all these reviews, authors would revise the material. But now, a new tool has revolutionized that paradigm.

• Student Data

McGraw-Hill authors now have access to real data from real students to create their revisions. This data is anonymously collected from the many students who use *LearnSmart*, the adaptive learning system that provides students with an individualized assessment of their own progress. Because virtually every text paragraph is tied to several questions that students answer while using *LearnSmart*, empirical data showing the specific concepts with which students have the most difficulty is easily pinpointed.

This student data from *LearnSmart* is in the form of a *heat map*, which graphically illustrates "hot spots" in the text that cause students the most difficulty. Using these hot spots, McGraw-Hill authors can refine the wording and content in the new edition to make these areas clearer than before.

- **StudySmart**

In addition to those areas that have been reworked for clarity in *A Child's World*, Thirteenth Edition, "StudySmart" icons are placed in the most important hot spots in the chapter based on student data. These icons lead students to digital assets that enhance their understanding of challenging concepts. The assets may be a video of a child that demonstrates a milestone, an animated figure to explain a concept visually, or a video of one of the book's authors to further explain the topic.

Students will see "StudySmart" QR codes throughout the chapters related to challenging concepts. One example in Chapter 1 is "Domains of Development." When students scan the QR code with their smartphones, they can access that digital asset for an enhanced explanation or alternate view of that material.

In addition, in each chapter students will find "Connect StudySmart" icons in the margin focusing on a specific challenging concepts such as "Operant Conditioning." These guide students to assignable and assessable digital activities that are part of Connect Child Development. This means instructors and students can determine how well they understand that concept prior to taking the high-stakes test.

study smart

Domains of
Development

connect
study smart

Operant Conditioning

Engage with Real Life as It Unfolds

Many of the Connect StudySmart icons guide students to McGraw-Hill's Milestones, another opportunity to enhance learning.

McGraw Hill's Milestones is a powerful tool that allows students to experience life as it unfolds, from infancy to through emerging adulthood. This tool consists of two essential components that work together to capture key changes throughout child development—**Milestones of Child Development** and **Milestones: Transitions**.

In **Milestones of Child Development**, students track the early stages of physical, social, and emotional development. By watching one child over time or comparing various children, Milestones provides a unique, experiential learning environment that can only be achieved by watching real human development as it happens—all in pre-, transitional, and post-milestone segments.

In **Milestones: Transitions**, students meet a series of people—from teenagers to individuals in late adulthood—to hear individual perspectives on changes that occur throughout the life span. Through a series of interviews, students are given the opportunity to think critically while exploring the differences in attitudes on everything from body image to changes in emotion, sexuality, cognitive processes, and death and dying.
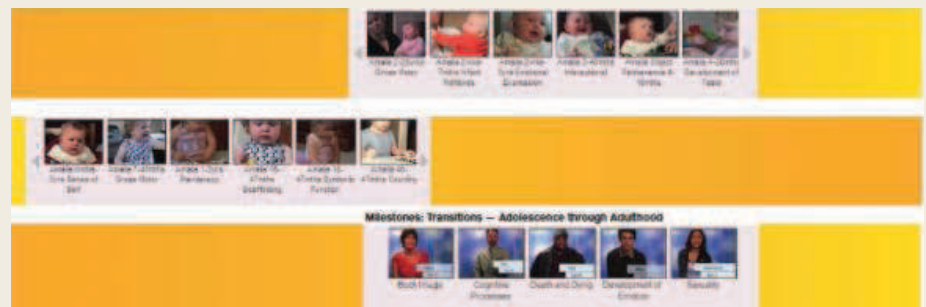
Real Research, Applications, Culture

We continue to emphasize *A Child's World* hallmarks of research, practical applications, and culture. In addition to updating the research base of each chapter, "The Research World" features provide an in-depth examination of research topics such as Chapter Two's adaptive value of immaturity. "The Everyday World" features deal with a variety of practical applications such as Chapter Five's comforting a crying baby. Stressing the cultural and historical influences on development, the "Around the World" features explore cultural and socioeconomic issues. In this edition, Gabriela Martorell's research with immigrant populations and her current involvement on an NSF grant designed to increase the retention of underrepresented students in the STEM areas (science, technology, engineering, and math) further contribute to this emphasis.

McGraw-Hill Connect Child Development

McGraw-Hill Connect engages students in the course content so they are better prepared, are more active in discussion, and achieve better results.

- ## LearnSmart

  Powered by McGraw-Hill Connect® Child Development, LearnSmart is our response to today's student. LearnSmart is designed to maximize productivity and efficiency in learning, helping students "know what they know" while helping them learn what they don't know. In fact, instructors using LearnSmart are reporting that their students' performance is improving by a letter grade or more. Through this unique tool, instructors have the ability to identify struggling students quickly and easily, *before* the first exam.
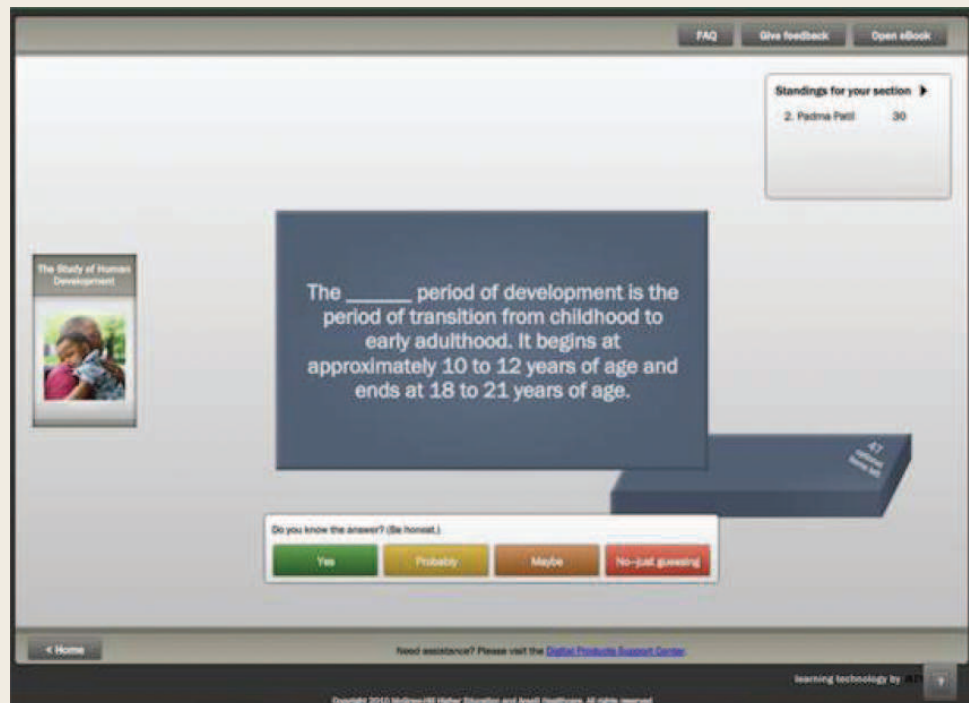
Regardless of individual study habits, preparation, and approaches to the course, students will find that *A Child's World* connects with them on a personal, individual basis and provides a road map for real success in the course.

• Streamlined Course Management and Powerful Reporting

Whether a class is face-to-face, hybrid, or entirely online, *A Child's World* provides the tools needed to reduce the amount of time and energy that instructors must expend to administer their course. Easy-to-use course management allows instructors to spend less time administering and more time teaching.

- **At-Risk Student Reports:** The At-Risk Report provides instructors with one-click access to a dashboard that identifies students who are at risk of dropping out of a course due to low engagement levels.

- **Category Analysis Reports:** The Category Analysis report is the place to find out how your students are performing relative to specific learning objectives and goals.

- **Item Analysis Reports:** The Item Analysis report is the best way to get a bird's-eye view of a single assignment. You'll be able to tell if students are improving or if the concepts are something you want to spend additional time on in class.

- **Student Performance Reports:** The student performance report helps you search for a specific student in your class and focus on that student's progress across your assignments.

- **Assignment Results and Statistics Reports:** The Assignment Results report shows your entire class's performance across all of your assignments. Assignment Statistics reports will give you quick data on each assignment including the mean score, high score, and low scores, as well as the number of times it was submitted.
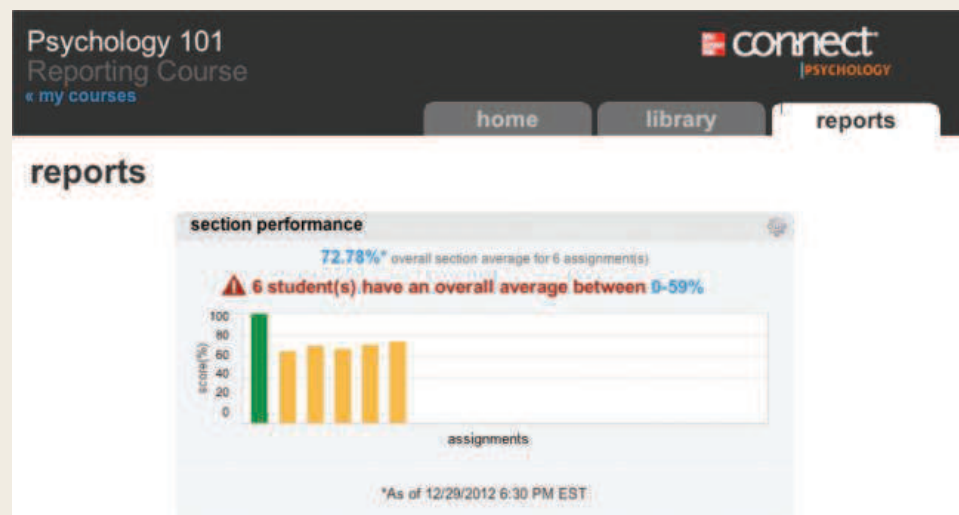
In addition to updating references, adding interesting margin notes, updating statistics, and the change in the design, this is a chapter-by-chapter list of topics that are new or have been revised based on the heat map data from students using Connect.

1 Studying a Child's World

- Revised the section on studying the life span
- Added material on developmental trajectories
- Revised information about minority children in the United States
- Updated statistics on poverty and ethnicity

2 A Child's World: How We Discover It

- Expanded "Issue 1: Is Development Active or Reactive" section
- Revised sections on mechanistic and organismic views of development
- Expanded material about Freud's ideas
- Revised the relationship between qualitative change and stage theories throughout the chapter
- Added an example of how Erikson's stages feed in to each other
- Added examples of concrete and abstract schemes
- Expanded disequilibrium material
- Revised exosystem influences and added an example
- Revised ethology and evolutionary psychology
- Expanded material about qualitative and quantitative research and the scientific method
- Revised the section on developmental research designs.
- Revised ethics material

3 Forming a New Life: Conception, Heredity, and Environment

- Updated material on multiple births
- Expanded information on the human genome
- Revised information on dominant and recessive genes
- Revised information on polygenic inheritance
- Expanded the description of epigenesis
- Revised the section on phenotype and genotype
- Expanded the description of incomplete dominance
- Expanded the description of sex-linked inheritance
- Expanded the section on heritability
- Added a simile for canalization
- Added an example of nonshared environmental influences

4 Pregnancy and Prenatal Development

- Revised the description of implantation
- Added information on organogenesis in text and figure
- Updated research on what fetuses can hear in utero
- Updated information on rubella cases in developing countries

5 Birth and the Newborn Baby

- Updated maternal and infant mortality rates
- Revised definition of *parturition*
- Expanded stages of labor, electronic fetal monitoring, and fontanels
- Added information on the functioning of body systems in neonates
- Added information on the Brazelton Neonatal Behavioral Assessment Scale
- Added an example of internal clocks
- Added information on cultural differences in infant sleep schedules
- Updated information on birth complications
- Revised the distinction between low birth weight and small-for-date infants
- Added additional information to the section on childbirth and bonding

6 Physical Development and Health during the First Three Years

- Added examples of cephalocaudal and proximodistal principles
- Added information on the cerebral hemispheres and their functions
- Revised information on cell death
- Added an example of a reflex
- Added information on plasticity
- Expanded sections on ecological systems and dynamic systems theories on motor development
- Updated worldwide neonatal mortality rate information

7 Cognitive Development during the First Three Years

- Revised the description of operant conditioning
- Expanded the use of conditioning techniques in the study of infant memory
- Revised the description of intelligent behavior
- Expanded the description of developmental tests
- Revised the section on early intervention
- Updated the section on imitative abilities
- Added an example of pictorial competence
- Expanded the description of scale error and the dual representation hypothesis
- Expanded the description of habituation and dishabituation
- Added an example of how visual preference is used in infant research
- Revised the use of habituation as a method to investigate visual recognition
- Added examples for categorization and causality
- Revised the description of the violation of expectations paradigm and its use for the investigation of object permanence
- Revised the section on number
- Revised the section on conceptual understanding and perceptual awareness
- Added examples of implicit and working memory
- Expanded the description of phonemes
- Added material about early sensitization of infants to their native language
- Added an example of syntax
- Revised the section on overregularization
- Revised and added an example to learning theoretical approach to language learning
- Revised the section on child-directed speech

8 Psychosocial Development during the First Three Years

- Added an example of an emotional response
- Updated the figure on differentiation of emotions
- Revised the introduction to temperament
- Expanded the example of a slow-to-warm up child
- Revised stability of temperament material
- Expanded the description of behavioral inhibition
- Revised the link to goodness of fit in the behavioral inhibition section
- Revised trust versus mistrust
- Expanded the description of attachment categories
- Revised the explanation of internal working models
- Revised the description of mutual regulation
- Added an example of social referencing
- Revised the description of socialization and internalization
- Added an example of how attentional processes impact socialization
- Revised the descriptions of conscience and compliance
- Revised the description of gender typing
- Updated data on maternal employment

9 Physical Development and Health in Early Childhood

- Expanded the brain development section
- Revised information on handedness
- Updated mortality information on children 5 years and younger
- Updated food security statistics
- Updated information on homelessness and health insurance

10 Cognitive Development in Early Childhood

- Revised the introduction to the Piagetian approach
- Expanded the section on symbolic function
- Revised the section on understanding causality
- Added an example to understanding identities and categorization
- Revised the research example of egocentrism
- Expanded conservation material
- Revised and added examples for basic processes and capacities in memory
- Added examples of episodic and generic memories
- Revised and added examples for influences on memory retention
- Expanded the definition of *intelligence*
- Revised information on scaffolding and the zone of proximal development
- Added an example of fast mapping
- Revised descriptions of grammar and syntax
- Added an example for pragmatics
- Revised the definition of *emergent literacy*
- Expanded the introduction to the child in kindergarten

11 Psychosocial Development in Early Childhood

- Revised the example of self-definition
- Revised developmental changes in self-esteem
- Added an example of helpless response pattern
- Revised the section on emotional understanding
- Added an example of initiative
- Revised the introduction to gender differences
- Revised the biological approach to gender differences
- Revised the discussion of evolutionary approach to gender
- Added supporting research on family influences
- Revised information to emphasize the developmental importance of play
- Revised information about levels of play
- Expanded dramatic play material
- Revised some information about reinforcement and punishment
- Expanded an example of inductive reasoning
- Added a table on parenting styles
- Added an example of instrumental aggression
- Revised the section on gender differences in aggression
- Revised the section on only children

12 Physical Development and Health in Middle Childhood

- Expanded brain development material
- Updated accidental death data in children
- Added an example of social anxiety

13 Cognitive Development in Middle Childhood

- Expanded spatial relationships and causality material
- Revised categorization material
- Expanded inductive and deductive reasoning
- Revised conservation material
- Revised the link between culture and mathematical reasoning
- Revised moral reasoning material
- Added an example to illustrate links between attention, memory, and planning
- Revised the description of executive functioning
- Added an example of selective attention
- Revised working memory material
- Expanded the description of metamemory
- Revised the section on mnemonics
- Added an example of the link between information processing and Piagetian tasks
- Added a definition of *psychometrics*
- Revised the section on cultural influences on IQ
- Added information on Gardner's theories of intelligence
- Revised the section on Sternberg's Triarchic Theory
- Added information to the section on dynamic tests of intelligence
- Expanded the definition of *syntax*
- Added examples to the section on reading
- Expanded the description of metacognition
- Added an example of self-efficacy
- Revised the definition of *special needs*
- Updated data on learning disabilities
- Revised the description of convergent and divergent thinking

14 Psychosocial Development in Middle Childhood

- Revised information about self-concept
- Revised self-esteem material
- Revised the description of emotional self-regulation
- Revised information on family atmosphere
- Expanded the description of coregulation
- Updated data on children living in poverty
- Updated data on living arrangements in children under 18
- Updated data on father-absent homes
- Revised the section on custody, visitation, and co-parenting
- Expanded the section on sociometric popularity
- Revised the section on levels of friendship in school-age children
- Added an example of a hostile attributional bias
- Expanded the description of resilience

15 Physical Development and Health in Adolescence

- Expanded the description of adolescence as a social construct
- Revised the section on adolescence as a time of opportunity and risk
- Revised the description of puberty
- Revised the section on family influences on pubertal timing
- Expanded the section on the adolescent brain
- Updated data on sleep needs and problems
- Added *binge drinking* as a key term
- Updated data on alcohol, marijuana, tobacco use, and depression rates in adolescents

16 Cognitive Development in Adolescence

- Revised the definition of *hypothetical-deductive reasoning*
- Revised information about evaluation of Piaget's approach
- Revised and added an example to language development in adolescence
- Expanded Kohlberg's theory of moral reasoning
- Revised examples of reasoning
- Revised and added an example to evaluation of Kohlberg's approach
- Revised the description of Gilligan's theory
- Added an example of prosocial moral reasoning
- Added the description of inductive disciplinary techniques
- Revised information about student motivation and self-efficacy
- Revised the description of brain differences by gender
- Updated data on high school drop out rates and on master's degrees obtained by women

17 Psychosocial Development in Adolescence

- Expanded the section on identity versus identity confusion and added *fidelity* as a key term
- Revised definitions of *crisis* and *commitment*
- Expanded examples of foreclosure and moratorium
- Revised gender differences in identity formation
- Revised some material in the section on ethnic factors in identity formation
- Added an example of cultural socialization
- Updated data on sexual activity in grades 9–12, contraceptive usage, sexually transmitted infections, and teenage pregnancies
- Revised relationships with family and peers
- Added examples of individuation
- Added an example of behavioral control techniques
- Added information on parental monitoring
- Revised trends in sibling relationships in adolescence
- Expanded the description of antisocial behavior
- Revised information on authoritative parenting
- Revised the description of collective efficacy

integrated instructor resources

The password-protected Online Learning Center for *A Child's World,* Thirteenth Edition, contains valuable tools for instructors to use in the classroom. This site includes chapter-by-chapter Instructor' Manual, Test Bank files, and PowerPoint presentations. Contact your local McGraw-Hill representative for log-in information: **www.mhhe.com/martorellacw13**

- **Instructors Manual**—The instructor's manual includes classroom activities available to both new and experienced instructors. Among the featured resources are teaching outlines, suggested lecture topics, and classroom discussions and activities. The manual is available in electronic format, for convenient access, editing, and printing.

- **Test Bank**—Each chapter's test bank holds approximately 100 questions that are designed to test factual, conceptual, and practice-based understanding. The test bank is compatible with **EZTest,** McGraw-Hill's **Computerized Test Bank** program.

  With the introduction of LearnSmart—an adaptive student study tool—to this edition of *A Child's World,* test bank questions have been modified to reflect a seamless integration between student study tools and instructor assessment tools. With updates to incorporate LearnSmart and Connect Learning Objective tags into EZTest, it will not only be easier for instructors to create assessments, but assessments that reflect student study habits. This alignment will benefit both students and instructors by creating cohesion between the key concepts that are read, understood, practiced, and ultimately, assessed.

- **PowerPoint Presentations**—These slides cover the key points of each chapter and include charts and graphs from the text. The PowerPoint presentations serve as an organization and navigation tool integrated with examples and activities from an expert instructor. The slides can be used as is or modified to meet your needs.

acknowledgments

A Child's World

Infancy through Adolescence

did you know?

▷ In some societies there is no
concept of adolescence?

▷ Many scholars today agree that
the construction of race is not a
concept that can be defended on a
biological basis?

▷ More than 16 million U.S. children
live in poverty and are at risk for
health, cognitive, emotional, and
behavioral problems?

*In this chapter, we describe how the
field of child development has itself
developed. We identify aspects of
development and show how they
interrelate. We summarize major
developments during each period of a
child's life. We look at influences on
development and the contexts in which
each occurs.*

Studying a
Child's World

There is nothing permanent except change.

—Heraclitus, fragment (6th century BC)

guidepost

1 What is child development, and how has its study evolved?

child development
Scientific study of processes of change and stability in children from conception through adolescence.

Developmental psychologists have helped identify key achievements in development across childhood. Many parenting web sites include lists of these milestones to help track.

The Study of Child Development: Then and Now

From the moment of conception, children begin a process of change that will continue throughout their lives. A single cell becomes a tiny group of cells that eventually becomes a living, breathing baby. And though this single cell develops into a unique individual, the changes human beings experience have common patterns. Babies grow and become children, who grow and become adolescents and then adults. Individuals grow in patterned ways, and they show consistency over time with respect to their unique characteristics. For example, about 10 to 15 percent of children are consistently shy, and another 10 to 15 percent are very bold. Although various influences can modify these traits, they tend to persist to a moderate degree, especially in children at one extreme or the other. This is discussed further in Chapter 8.

The field of **child development** focuses on the scientific study of systematic processes of change and stability in human children. Developmental scientists—people engaged in the professional study of child development—look at ways in which children change from conception through adolescence as well as at characteristics that remain fairly stable. Which of a child's characteristics are most likely to endure? Which are likely to change, and why? These are among the questions developmental scientists seek to answer.

The work of developmental scientists can have a dramatic impact on children's lives. Research findings often have direct applications to child rearing, education, health, and social policy. For example, researchers found that Boston public school students who went to school hungry or lacked essential nutrients in their diet had poorer grades and more emotional and behavior problems than their classmates. After the schools started a free breakfast program, participating students improved their math grades, were absent and tardy less often, and had fewer emotional and behavioral problems (Kleinman et al., 2002).

Research findings influence child rearing, education, heath, and social policy. When researchers determined that students performed better when they had a good breakfast, a number of schools instituted breakfast programs.

EARLY APPROACHES

The formal *scientific* study of child development is relatively new. Looking back, we can see dramatic changes in the ways of investigating the world of childhood.

Forerunners of the scientific study of child development were *baby biographies,* journals kept to record the early development of a single child. One journal, published in 1787, contained the German philosopher Dietrich Tiedemann's observations of his infant son's sensory, motor, language, and cognitive development (1787/1897). Typical of the speculative nature of such observations was Tiedemann's erroneous conclusion, after watching the infant suck more continuously on a cloth tied around something sweet than on a nurse's finger, that sucking appeared to be "not instinctive, but acquired" (Murchison & Langer, 1927, p. 206).

It was Charles Darwin, originator of the theory of evolution, who first emphasized the *developmental* nature of infant behavior. In the belief that human beings could better understand themselves by studying their origins—both as a species and as individuals—Darwin in 1877 published notes on his son Doddy's sensory, cognitive, and emotional development during his first 12 months (Keegan & Gruber, 1985). Darwin's journal gave baby biographies scientific respectability; about 30 more were published during the next three decades (Dennis, 1936).

DEVELOPMENTAL PSYCHOLOGY BECOMES A SCIENCE

By the end of the nineteenth century, several advances in the Western world had paved the way for the scientific study of child development. Scientists had unlocked the mystery of conception and were arguing with renewed vigor about the relative importance of nature and nurture (inborn characteristics and external influences). Advances in medicine, including the discovery of germs and the development of vaccines, made it possible for many more children to survive infancy. Child welfare laws designed to protect children from long workdays let them spend more time in school, and parents and teachers became more concerned with identifying and meeting children's developmental needs. The new science of psychology suggested that people could better understand themselves by learning what had influenced them as children.

Still, this new discipline had far to go. Adolescence was not considered a separate period of development until the early twentieth century, when G. Stanley Hall, a pioneer in child study, published a popular (though somewhat unscientific) book called *Adolescence*. The establishment of research institutes in the 1930s and 1940s at universities such as Iowa, Minnesota, Columbia, Berkeley, and Yale marked the emergence of child psychology as a true science with professionally trained practitioners. Longitudinal studies, such as Arnold Gesell's (1929) studies of stages in motor development, provided research-based information about developments that normally occur at various ages. Other major studies that began around 1930—the Fels Research Institute Study, the Berkeley Growth and Guidance Studies, and the Oakland (Adolescent) Growth Study—produced much information on long-term development.

STUDYING THE LIFE SPAN

When the field of developmental psychology first emerged as a scientific discipline, most researchers focused their energies on infant and child development. Growth and development are more obvious during these times given the rapid pace of change. As the field matured, however, it became clear that development did not just include infancy and childhood. On the day of birth, a child has already had nine months of development, and environmental influences experienced during that time can have lifelong consequences. And, once childhood has passed, development continues; adults develop and change, just as children do, and development continues until death.

Today, researchers consider development to be from "womb to tomb," comprising the entire human life span from conception to death. Moreover, they acknowledge that development can be either positive (e.g., becoming toilet trained or enrolling in a college course after retirement) or negative (e.g., once again wetting the bed after a traumatic

G. Stanley Hall was the originator of the common stereotype of adolescence as a time of storm and strife, although later research showed his conclusions to be overstated.

physical development
Growth of body and brain, including biological and physiological patterns of change in sensory capacities, motor skills, and health.

cognitive development
Pattern of change in mental abilities, such as learning, attention, memory, language, thinking, reasoning, and creativity.

psychosocial development
Pattern of change in emotions, personality, and social relationships.

event or isolating yourself after retirement). For these reasons, events such as the timing of parenthood, maternal employment, and marital satisfaction are now also studied under the umbrella of developmental psychology. This book focuses on development from conception to adolescence; however, some factors about adult development are included because they have an influence on how children develop.

Development is messy. It's complex and multifaceted and shaped by interacting arcs of influence. Therefore, development is best understood with input from a variety of theoretical and research orientations and is most appropriately studied using multiple disciplines. Thus, the study of development has been interdisciplinary almost from the start (Parke, 2004b). Students of child development draw collaboratively from a wide range of disciplines, including psychology, psychiatry, sociology, anthropology, biology, genetics, family science, education, history, and medicine. This book includes findings from research in all these fields.

NEW FRONTIERS

Although children have been the focus of scientific study for more than 100 years, this exploration is ever evolving. The questions developmental scientists seek to answer, the methods they use, and the explanations they propose are more sophisticated and more varied than they were even 10 years ago. These shifts reflect progress in understanding as new investigations build on or challenge those that went before. They also reflect advances in technology. Sensitive instruments that measure eye movements, heart rate, blood pressure, muscle tension, and the like are illuminating biological influences and correlates of development that were previously hidden. Digital technology and computers enable investigators to scan infants' facial expressions for early signs of emotions and to analyze how mothers and babies communicate. Advances in brain imaging make it possible to probe the mysteries of temperament, to investigate the neural basis of language, and to pinpoint the sources of logical thought.

The Study of Child Development: Basic Concepts

The processes of change and stability that developmental scientists study occur in all domains, or aspects, of the self and throughout all of childhood and adolescence.

DOMAINS OF DEVELOPMENT

Developmental scientists study three *domains,* or aspects, of the self: physical, cognitive, and psychosocial. Growth of the body and brain, sensory capacities, motor skills, and health are parts of biological or **physical development**. Learning, attention, memory, language, thinking, reasoning, and creativity make up **cognitive development**. Emotions, personality, and social relationships are aspects of **psychosocial development**.

Although we talk separately about physical, cognitive, and psychosocial development, these domains are interrelated: each affects the others. As one researcher pointed out, "Our brains work better, our thinking is sharper, our mood brighter, and our vulnerability to disease diminished if we are physically fit" (Diamond, 2007, p. 153). For example, a child with frequent ear infections may develop language more slowly than a child without this physical problem. During puberty, dramatic physical and hormonal changes affect the developing sense of self.

Cognitive advances are closely related to physical, emotional, and social factors. For example, the ability to control your body's movements opens up a world of exploration to the infant, a world that grows more accessible with each advance in motor development. Understanding and using language depends on certain physical structures in the brain. A child who is precocious in language development may gain in self-esteem and social acceptance.

Psychosocial development can affect cognitive and physical functioning. Indeed, without meaningful social connections, physical and mental health can suffer. Motivation and self-confidence are important contributors to school success, whereas negative emotions such as fear and anxiety can impair school performance.

Thus, although for simplicity's sake we look separately at physical, cognitive, and psychosocial development, development is a unified process. Throughout the text, we highlight links among the three major domains of development.

> The interactions between domains of development can be conceptualized as a giant spiderweb where one thread of development is affected by what is going on in the rest of the web. A vibration experienced in one area is experienced by the whole web.

PERIODS OF DEVELOPMENT

Division of the life span into periods of development is a **social construction:** a concept or practice that may appear natural and obvious to those who accept it, but in reality is an invention of a particular culture or society. There is no objectively definable moment when a child becomes an adult or a young person becomes old. In fact, our understanding of childhood itself can be viewed as a social construction. In contrast to the relative freedom children have in the United States today, young children in colonial times were treated much like small adults and were expected to do adultlike tasks such as knitting socks and spinning wool (Ehrenreich & English, 2005). Inuit parents in the Canadian Arctic believe that young children are not yet capable of thought and reason and therefore are lenient when their children cry or become angry. On the other hand, parents on the Pacific Island of Tonga regularly beat 3- to 5-year-olds, whose crying is attributed to willfulness (Briggs, 1970; Morton, 1996).

The concept of adolescence as a period of development in industrial societies is quite recent. Until the early twentieth century, young people in the United States were considered children until they left school, married or got a job, and entered the adult world. By the 1920s, with the establishment of comprehensive high schools to meet the needs of a growing economy and with more families able to support extended formal education for their children, the teenage years had become a distinct period of development (Keller, 1999). In many preindustrial societies, the concept of adolescence does not exist. The Chippewa Indians, for example, have only two periods of childhood: from birth until the child walks, and from walking to puberty. What we call *adolescence* is viewed as part of adulthood (Broude, 1995).

In this book, we follow a sequence of five periods generally accepted in Western industrial societies. After examining the crucial changes that occur in the first period, before birth, we trace physical, cognitive, and psychosocial development through infancy and toddlerhood, early childhood, middle childhood, and adolescence (Table 1.1). Again, these age divisions are approximate and arbitrary.

social construction
Concept about the nature of reality based on societally shared perceptions or assumptions.

what's your view?
Why do you think various societies divide the periods of development differently?

Peer groups become increasingly important in middle childhood and adolescence and strongly influence behavior.

TABLE 1.1 Typical Major Developments in Five Periods of Child Development			
Age Period	**Physical Developments**	**Cognitive Developments**	**Psychosocial Developments**
Prenatal Period (conception to birth)	Conception occurs by normal fertilization or other means. The genetic endowment interacts with environmental influences from the start. Basic body structures and organs form; brain growth spurt begins. Physical growth is the most rapid in the life span. Vulnerability to environmental influences is great.	Abilities to learn and remember and to respond to sensory stimuli are developing.	Fetus responds to mother's voice and develops a preference for it.
Infancy and Toddlerhood (birth to age 3)	All senses and body systems operate at birth to varying degrees. The brain grows in complexity and is highly sensitive to environmental influence. Physical growth and development of motor skills are rapid.	Abilities to learn and remember are present, even in early weeks. Use of symbols and ability to solve problems develop by end of 2nd year. Comprehension and use of language develop rapidly.	Attachments to parents and others form. Self-awareness develops. Shift from dependence to autonomy occurs. Interest in other children increases.
Early Childhood (ages 3 to 6)	Growth is steady; appearance becomes more slender and proportions more adultlike. Appetite diminishes, and sleep problems are common. Handedness appears; fine and gross motor skills and strength improve.	Thinking is somewhat egocentric, but understanding of other people's perspectives grows. Cognitive immaturity results in some illogical ideas about the world. Memory and language improve. Intelligence becomes more predictable. Preschool experience is common, and kindergarten experience is more so.	Self-concept and understanding of emotions become more complex; self-esteem is global. Independence, initiative, and self-control increase. Gender identity develops. Play becomes more imaginative, more elaborate, and usually more social. Altruism, aggression, and fearfulness are common. Family is still the focus of social life, but other children become more important.
Middle Childhood (ages 6 to 11)	Growth slows. Strength and athletic skills improve. Respiratory illnesses are common, but health is generally better than at any other time in life span.	Egocentrism diminishes. Children begin to think logically but concretely. Memory and language skills increase. Cognitive gains permit children to benefit from formal schooling. Some children show special educational needs and strengths.	Self-concept becomes more complex, affecting self-esteem. Coregulation reflects gradual shift in control from parents to child. Peers assume central importance.
Adolescence (ages 11 to about 20)	Physical growth and other changes are rapid and profound. Reproductive maturity occurs. Major health risks arise from behavioral issues, such as eating disorders and drug abuse.	Ability to think abstractly and use scientific reasoning develops. Immature thinking persists in some attitudes and behaviors. Education focuses on preparation for college or vocation.	Search for identity, including sexual identity, becomes central. Relationships with parents are generally good. Peer group may exert a positive or negative influence.

Although individual differences exist in the way children deal with the characteristic events and issues of each period, developmental scientists suggest that certain basic needs must be met and certain tasks mastered for normal development to occur. Infants, for example, are dependent on adults for food, clothing, and shelter as well as for human contact and affection. They form attachments to parents and caregivers, who also become attached to them. With the development of speech and self-locomotion, toddlers become more self-reliant; they need to assert their autonomy but also need parents to set limits on their behavior. During early childhood, children develop more self-control and more interest in other children. During middle childhood, control over behavior gradually shifts from parent to child, and the peer group becomes increasingly important. A central task of adolescence is the search for identity—personal, sexual, and occupational. As adolescents become physically mature, they deal with conflicting needs and emotions as they prepare to leave the parental nest.

Influences on Development

What makes each child unique? Although students of development are interested in the universal developmental processes experienced by all children, they also must consider **individual differences** in characteristics, influences, and developmental outcomes. Children differ in gender, height, weight, and body build; in health and energy level; in intelligence; and in temperament, personality, and emotional reactions. The contexts of their lives differ too: the homes, communities, and societies they live in, the relationships they have, the kinds of schools they go to (or whether they go to school at all), and how they spend their free time. Because of this, every child has a different developmental trajectory—a unique and individual path to follow. One of the primary challenges in developmental psychology is to identify the universal influences on development, and then apply those to the understanding of individual differences in developmental trajectories.

> *Hypnotizability is one individual difference between people. Only about 10 percent of the population is highly hypnotizable.*
>
> Spiegel, 1985

What influences make one child different from another?

guidepost 3

individual differences
Differences among children in characteristics, influences, or developmental outcomes.

HEREDITY, ENVIRONMENT, AND MATURATION

Some influences on development originate primarily with **heredity**, inborn traits or characteristics inherited from a child's biological parents. Other influences come largely from the inner and outer **environment**, the world outside the self beginning in the womb, and the learning that comes from experience—including *socialization*, a child's induction into the value system of the culture. Which of these factors—heredity or environment—has more impact on development? This issue inspires intense debate. Theorists differ in the relative importance they give to *nature* (heredity) and *nurture* (environmental influences both before and after birth).

Today, scientists have found ways to measure more precisely the roles of heredity and environment in the development of specific traits within a population. When we look at a particular child, however, research with regard to almost all characteristics points to a blend of inheritance and experience. Thus, even though intelligence is strongly affected by heredity, environmental factors such as parental stimulation, education, and peer influences also affect it. Although there still is some dispute about the relative importance of nature and nurture, contemporary theorists and researchers are more interested in finding ways to explain how they work together rather than arguing about which factor is more important. In other words, they are more concerned with the processes governing development than the outcome of any one particular characteristic.

Many typical changes of infancy and early childhood, such as the emergence of the abilities to walk and talk, are tied to **maturation** of the body and brain—the unfolding

heredity
Inborn characteristics inherited from the biological parents.

environment
Totality of nonhereditary, or experiential, influences on development.

maturation
Unfolding of a universal natural sequence of physical and behavioral changes.

of a universal, natural sequence of physical changes and behavior patterns. These maturational processes, which are seen most clearly in the early years, act in concert with the influences of heredity and environment. As children grow into adolescents and then into adults, individual differences in innate characteristics (heredity) and life experience (environment) play an increasing role as children adapt to the internal and external conditions in which they find themselves.

Even in processes that all children undergo, rates and timing of development vary. Throughout this book, we talk about average ages for the occurrence of certain events, such as the first word, the first step, the first menstruation or wet dream, and the development of logical thought. But these ages are merely averages, and there is wide variation among children with respect to these norms. Only when deviation from the average is extreme should we consider development exceptionally advanced or delayed.

To understand child development, then, we need to look at the *inherited* characteristics that give each child a special start in life. We also need to consider the many *environmental*, or experiential, factors that affect children, especially such major contexts as family, neighborhood, socioeconomic status, race/ethnicity, and culture. We need to consider how heredity and environment interact. We need to understand which developments are primarily maturational and which are not. We need to look at influences that affect many or most children at a certain age or a certain time in history and also at those that affect only certain individuals. Finally, we need to look at how timing can accentuate the impact of certain influences.

CONTEXTS OF DEVELOPMENT

Human beings are social beings. Right from the start they develop within a social and historical context. For an infant, the immediate context normally is the family; and the family in turn is subject to the wider and ever-changing influences of neighborhood, community, and society.

nuclear family
Two-generational household unit consisting of one or two parents and their biological children, adopted children, or stepchildren.

Family The **nuclear family** is a household unit generally consisting of one or two parents and their children, whether biological, adopted, or stepchildren. Historically, the two-parent nuclear family has been the dominant family unit in the United States and other Western societies. However, the nuclear family today is different from what it used to be. Instead of the large, rural family in which parents and children worked side by side on the family farm, we now see smaller, urban families in which both parents work outside the home and children spend much of their time in school or child care. The increased incidence of divorce also has affected the nuclear family. Children of divorced parents may live with one or the other parent or may move back and forth between them. The household may include a stepparent and stepsiblings or a parent's live-in partner, and there are increasing numbers of unmarried parents and gay and lesbian households (Dye, 2010; Hernandez, 1997, 2004; Teachman, Tedrow, & Crowder, 2000).

In many societies in Asia, Africa, and Latin America and among some U.S. families that trace their lineage to those countries, the **extended family**—a multigenerational kinship network of grandparents, aunts, uncles, cousins, and more distant relatives—is the traditional family form. Many or most people live in *extended-family households*, where they have daily contact with kin. Adults often share breadwinning and child-raising responsibilities, and children are responsible for younger brothers and sisters. Often these households are headed by women (Aaron, Parker, Ortega, & Calhoun, 1999; Johnson et al., 2003).

extended family
Multigenerational kinship network of parents, children, and other relatives, sometimes living together in an extended-family household.

Today the extended-family household is becoming slightly less typical in some developing countries due to industrialization and migration to urban centers (Brown & Gilligan, 1990; Gorman, 1993; Kinsella & Phillips, 2005). Meanwhile, in the United States, economic pressures, housing shortages, and out-of-wedlock childbearing have helped to fuel a trend toward three- and even four-generational family households. There were nearly 4 million such households—almost 4 percent of all households—in 2000,

many of them in places with large numbers of recent immigrants living with relatives, such as Hawaii and California (U.S. Census Bureau, 2001, revised 2008).

Culture and Race/Ethnicity **Culture** refers to a society's or group's total way of life, including customs, traditions, laws, knowledge, beliefs, values, language, and physical products, from tools to artworks—all of the behavior and attitudes that are learned, shared, and transmitted among members of a social group. Culture is constantly changing, often through contact with other cultures. Today cultural contact among adults and children alike is enhanced by computers and telecommunications; e-mail, text messaging, and instant messaging offer almost immediate communication across the globe, and digital services such as iTunes give people around the world easy access to American music and movies.

An **ethnic group** consists of people united by a distinctive culture, ancestry, religion, language, or national origin, all of which contribute to a sense of shared identity and shared attitudes, beliefs, and values. By 2050, due to rising immigration and high birthrates among immigrant families, ethnic minorities in the United States are expected to become the majority. In fact, in 2008, roughly a third of all children and nearly half of children under the age of 5 (U.S. Census Bureau, 2008a, 2009d) were from a minority group. The proportion of minority children is increasing, and it is predicted that minority children will make up more than half of the child population by 2023. By 2050, 62 percent of the nation's children are projected to be members of what are now minority groups, and the proportion of Hispanic or Latino/a children—39 percent—will surpass the 38 percent who will be non-Hispanic white (U.S. Census Bureau, 2008a; Figure 1.1a and 1.1b). Already, nearly one-fourth of U.S. kindergarteners and one-fifth of all kindergarten through twelfth grade are Hispanic (U.S. Census Bureau, 2009b, 2009c).

Ethnic and cultural patterns affect child development by their influence on the composition of a household, its economic and social resources, the way its members act toward one another, the foods they eat, the games children play, the way they learn, how well they do in school, the occupations adults engage in, and the way family members think about and perceive the world. For example, as we mentioned, children of immigrant or minority families are more likely than other U.S. children to live in extended-family households. In time, however,

> When we are immersed in a culture, it is difficult to see how much of what we do is affected by it. For example, there are regional differences in the United States regarding what soft drinks are called. The term *pop* is most common in the Midwest, Great Plains, and Northwest, *coke* is commonly used in the South and New Mexico, and *soda* is primarily used in California and bordering states.

culture
A society's or group's total way of life, including customs, traditions, beliefs, values, language, and physical products—all learned behavior passed on from adults to children.

ethnic group
A group united by ancestry, race, religion, language, or national origin that contributes to a sense of shared identity.
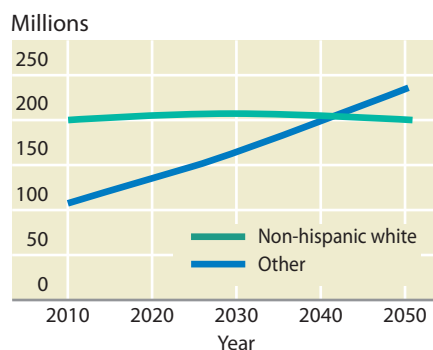
(*a*) Population projections

Source: U.S. Census Bureau, 2008a.
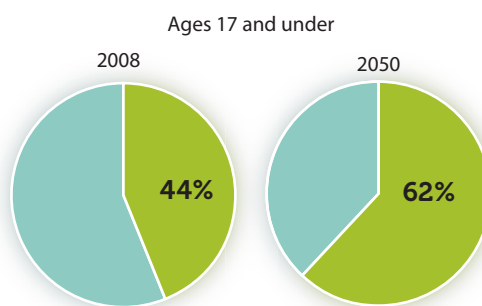
(*b*) Percent minority children

FIGURE 1.1

Population Projections for Non-Hispanic White and Minority Groups, 2008–2050

(a) *According to Census Bureau projections, racial/ethnic minorities will reach 54 percent of the U.S. population, exceeding the proportion of non-Hispanic white people, by 2050.* (b) *Also by 2050, "minority" children under age 18 are expected to make up 62 percent of the child population.*

around the world

CHILDREN OF IMMIGRANT FAMILIES

The United States has always been a nation of immigrants and ethnic groups, but the primary ethnic origins of the immigrant population have shifted from Europe and Canada—the homelands of 97 percent of immigrants in 1910—to Latin America, the Caribbean, Asia, and Africa, which now account for 88 percent of all immigrants.

Nearly one-fourth (24 percent) of U.S. children lived in immigrant families in 2007. Faster-growing than any other group of children in the country, they are the leading edge of the coming shift of racial and ethnic minorities to majority status. Whereas earlier waves of immigrants were almost entirely white and Christian, more than one-third (37 percent) of children in immigrant families have nonwhite parents. Many of these families are Confucian, Buddhist, Hindu, Jewish, Muslim, Shinto, Sikh, Taoist, or Zoroastrian, and, although predominantly Spanish-speaking, they speak a wide variety of languages.

Immigrant families are widely dispersed. Children in immigrant families account for at least 10 percent of all children in 27 states and the District of Columbia, but they are most highly concentrated in California, Texas, New York, Florida, and Illinois, which together are home to 64 percent of children of immigrants.

More immigrants come from Mexico (40 percent) than from any other country (Hernandez, Denton, & Macartney, 2008). An estimated 5 million Mexican-born children or children of Mexican-born parents live in the United States. Many of these parents work at low-paying jobs in the food service, maintenance, construction, farming, and manufacturing industries, earning less than $20,000 a year full time. With anti-immigrant sentiment rising, undocumented parents live in constant fear of losing their jobs (if they can find one) and of being deported (Children in North America Project, 2008). Nearly half of all children in immigrant families (47.9 percent) live in poverty (Hernandez, Denton, & Macartney, 2007), and many do not have health insurance despite being eligible, even though most of the parents work hard to support their families.

Most children of immigrants live with two parents (married or cohabiting), but these children are nearly twice as likely as other children to live in extended-family households with grandparents, other relatives, and even nonrelatives, often in overcrowded housing. Children in immigrant families are more than three times as likely as those in native families to have fathers who have not finished high school (40 percent as compared to 12 percent). Immigrant parents often have high educational aspirations for their children but lack the knowledge and experience to help their children succeed in school. (Issues concerning the education of immigrant children are discussed in later chapters.)

A little-known fact is that almost one in four children in immigrant families (24 percent) has one parent born in the United States, and nearly half (48 percent) have a parent who is a naturalized citizen. More than two out of three (68 percent) have parents who have lived in the United States for 10 years or more, and nearly four out of five (79 percent) of the children were born in the United States. In fact, nearly two out of three (63 percent) children living with undocumented parents are themselves natural-born citizens.

As immigration fuels dramatic changes in the United States population, developmental issues affecting children in immigrant families will become increasingly important subjects for research.

Source: Unless otherwise cited, the source for this box is Hernandez, Denton, and Macartney (2008).

what's your view

Are you or any members of your family immigrants or children of immigrants? If so, what factors helped or hindered your (or their) adjustment to life in the United States? How do you imagine life may be different for children of immigrants 40 years from now?

---

what's your view

How might you be different if you had grown up in a culture other than your own?

immigrants tend to *acculturate*, or adapt, by learning the language, customs, and attitudes needed to get along in the dominant culture while trying to preserve some of their cultural practices and values (Johnson et al., 2003). Box 1.1 looks at immigrant families in the United States.

Within broad ethnic boundaries, much diversity exists. The European-descended "white majority" consists of many distinct ethnicities—German, Belgian, Irish, French, Italian, and so on. Cuban Americans, Puerto Ricans, and Mexican Americans—all

Hispanic Americans—have different histories and cultures and may be of African, European, Native American, or mixed descent (Johnson et al., 2003; Sternberg, Grigorenko, & Kidd, 2005). African Americans from the rural South differ from those of Caribbean ancestry. Asian Americans hail from several countries with distinct cultures, from modern, industrial Japan to communist China to the remote mountains of Nepal, where many people still practice their ancient way of life. American Indians consist of hundreds of recognized nations, tribes, bands, and villages (Lin & Kelsey, 2000).

> People in the United States are more likely to self-disclose personal information than are people in Japan. Why might this be? The freer social structure in the United States might be one reason. When you can make and break friendships easily, you need to cement social bonds as much as possible.
>
> Schug, Yuki, & Maddux, 2010

Many scholars now agree that the term *race*, historically and popularly viewed as an identifiable biological category, is a social construct. There is no clear scientific consensus on its definition, and it is impossible to measure reliably (American Academy of Pediatrics Committee on Pediatric Research, 2000; Bonham, Warshauer-Baker, & Collins, 2005; Helms, Jernigan, & Macher, 2005; Lin & Kelsey, 2000; Smedley & Smedley, 2005; Sternberg et al., 2005). Human genetic variation occurs along a broad continuum, and 90 percent of such variation occurs *within* rather than among socially defined races (Bonham et al., 2005; Ossorio & Duster, 2005). Nevertheless, race as a social category clearly remains a factor in research because it makes a difference in "how individuals are treated, where they live, their employment opportunities, the quality of their health care, and whether [they] can fully participate" in their society (Smedley & Smedley, 2005, p. 23).

Categories of culture, race, and ethnicity are fluid (Bonham et al., 2005; Sternberg et al., 2005), "continuously shaped and redefined by social and political forces" (Fisher et al., 2002, p. 1026). Geographic dispersion and adaptation to local conditions together with a steady rise in interracial marriages—more than 5 percent of U.S. marriages in 2000 (Lee & Edmonston, 2005)—have produced a wide variety of physical and cultural characteristics within populations (Smedley & Smedley, 2005; Sternberg et al., 2005). A person such as President Barack Obama, with a black father from Kenya and a white mother from Kansas, may fall into more than one racial or ethnic category and may identify more strongly with one or another at different times. Indeed, according to a 2007 estimate, 1.6 percent of the U.S. population is of two or more races (Central Intelligence Agency, 2008). A term such as *black*, *Hispanic*, *Asian*, or *white* can be an **ethnic gloss:** an overgeneralization that obscures or blurs such variations (Parke, 2004b; Trimble & Dickson, 2005).

Socioeconomic Status and Neighborhood

A family's **socioeconomic status (SES)** is based on family income and the educational and occupational levels of the adults in the household. Throughout this book, we examine many studies that relate SES to developmental processes (such as mothers' verbal interactions with their children) and to developmental outcomes (such as health and cognitive performance). SES affects these processes and outcomes indirectly, through such associated factors as the kinds of homes and neighborhoods people live in and the quality of nutrition, medical care, and schooling available to them.

ethnic gloss
Overgeneralization about an ethnic or cultural group that blurs or obscures variations within the group or overlaps with other such groups.

socioeconomic status (SES)
Combination of economic and social factors, including income, education, and occupation, that describe an individual or family.

The existence of Kian and Remee Hodgson, who as fraternal twins share approximately 50 percent of their genes, calls into question the concept of race as a biological construct.

FIGURE 1.2

Development Indicators by Country

The general socioeconomic level of a country (as measured by its per capita gross national income, or GNI) is related to its people's survival, health, and living conditions, which vary greatly throughout the world. Children's chances in life are far better in industrialized countries, such as the United States, Japan, and the nations of western Europe, than in the least developed countries, such as those of sub-Saharan Africa.
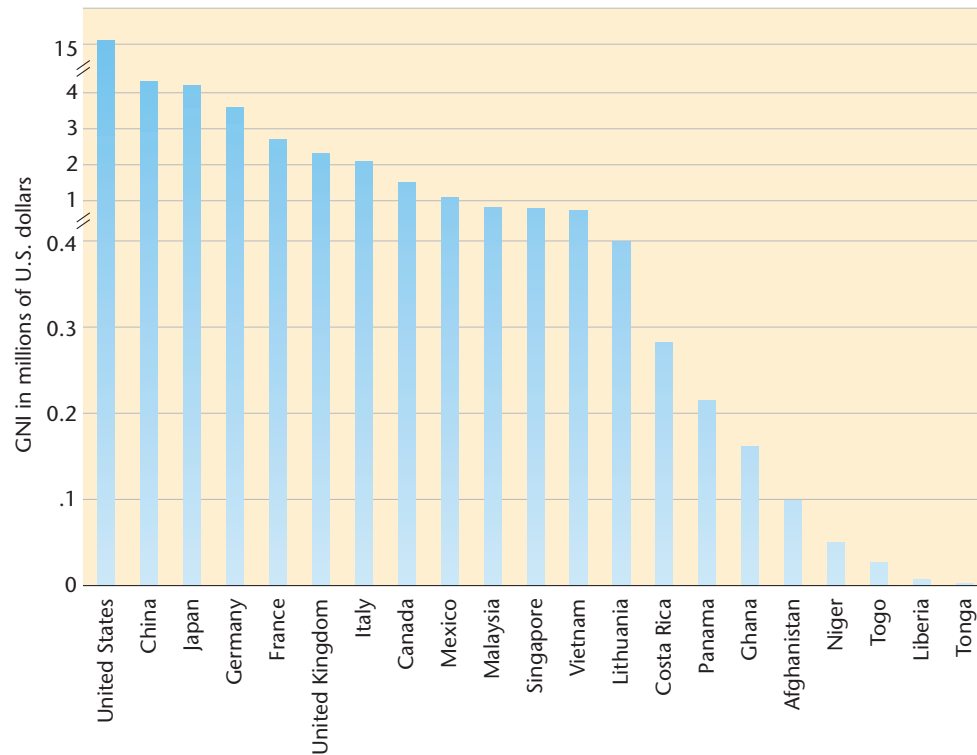
Source: World Development Indicators database, World Bank, accessed January 13, 2013.

More than half of the world's population (53 percent) live on less than the international poverty standard of $2 a day (Population Reference Bureau, 2006), and 19 percent—but twice as many in the least economically developed countries—live on less than $1 a day (United Nations Children's Fund, 2007; Figure 1.2). Even in the United States, where poverty thresholds depend on family size and composition, more than 16 million children—21.9 percent of all children under age 18—live in poverty, and 7.4 million children—almost 7 percent—are in extreme poverty (Children's Defense Fund, 2012; DeNavas-Walk, Proctor & Smith, 2012).*

Furthermore, child poverty in the United States has increased since the 1990s (Figure 1.3), and poor children throughout North America have become poorer in comparison with the rest of the child population. Poverty rates vary by geographic region and are highest among racial and ethnic minorities. In the United States, about 39 percent of black children and more than 35 percent of Latino children are poor as compared to 10 percent of white children. Children living with single parents or stepparents or with nonparental caregivers, such as grandparents, and those with less educated parents are especially likely to be poor (Children's Defense Fund, 2012; Children in North America Project, 2008).

Poverty is stressful and can damage the physical, cognitive, and psychosocial well-being of children and families. Poor children are more likely than other children to go hungry; to have frequent illnesses; to lack access to health care; to experience accidents, violence, and family conflict; and to show emotional or behavioral problems. Their cognitive potential and school performance suffer as well (Children in North America Project, 2008; Children's Defense Fund, 2012; Evans, 2004; Wadsworth & Santiago, 2008). The harm done by poverty is often indirect, through its impact on parents' emotional state and parenting practices and on the home environment they create (see Chapter 10). Threats to well-being multiply if, as often happens, several **risk factors**—conditions that increase the likelihood of a negative outcome—are present.

risk factors
Conditions that increase the likelihood of a negative developmental outcome.

*A family of four was considered extremely poor in 2012 if their household income was below $10,600, half of the official poverty line (Children's Defense Fund, 2012).

FIGURE 1.3

Children under 18 years living in poverty, 1959–2010

Legend: All children — White not Hispanic — Asian and Pacific Islander — White — Black — Hispanic (any race)
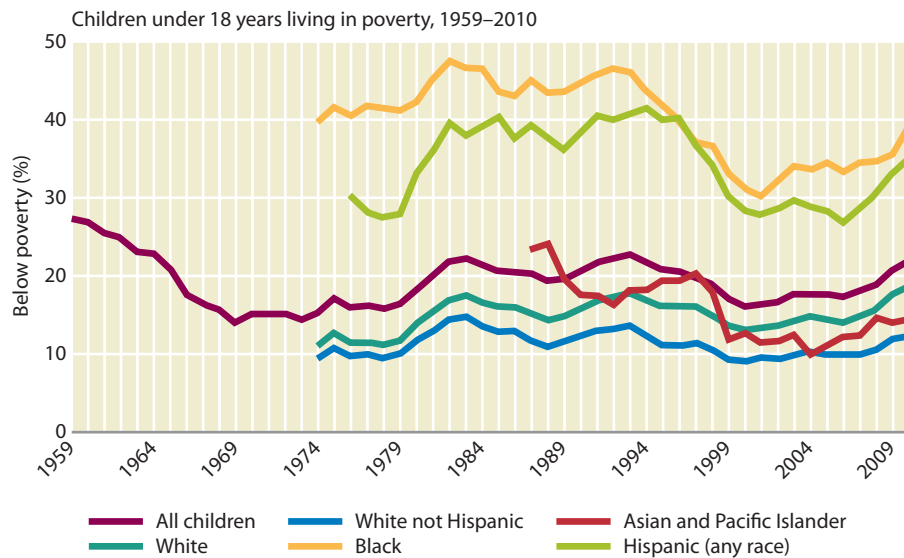
Source of Data: U.S. Bureau of the Census, Historical Poverty Tables, People. Table 3.

FIGURE 1.3

Child Poverty Rates, United States, 1959–2010

The child poverty rate dropped substantially in the 1960s, then rose significantly in the early 1980s. Great strides were made in decreasing child poverty in the late 1990s, owing in part to the strong economy. However, the child poverty rate was higher in 2007 than at the beginning of the decade. Child poverty is closely tied to the overall health of the economy, rising in periods of recession.

Affluence doesn't necessarily protect children from risk. Some children in affluent families face pressure to achieve and are often left on their own by busy parents. These children have high rates of substance abuse, anxiety, and depression (Luthar & Latendresse, 2005).

The composition of a neighborhood affects the way children develop. Living in a neighborhood with large numbers of people who are poor and unemployed makes it less likely that effective social support will be available (Black & Krishnakumar, 1998). Positive development can occur despite serious risk factors, however (Kim-Cohen, Moffitt, Caspi, & Taylor, 2004). Consider the television star Oprah Winfrey, the singer and songwriter Shania Twain, the actor and director Ashton Kutcher, and former U.S. president Bill Clinton, all of whom grew up in poverty.

The Historical Context At one time developmental scientists paid little attention to the historical context—the time in which people live. Then, as the early longitudinal studies of childhood extended into the adult years, investigators began to focus on how certain experiences, tied to time and place, affect the course of people's lives (Box 1.2). Today, as we discuss in the next section, the historical context is an important part of the study of development.

NORMATIVE AND NONNORMATIVE INFLUENCES

To understand similarities and differences in development, we need to look at **normative** influences—biological or environmental events that affect many or most people in a society in similar ways— and also at events that touch only certain individuals (Baltes & Smith, 2004).*

Normative age-graded influences are highly similar for people in a particular age group. The timing of biological events is fairly predictable within a normal range. For example, children don't experience puberty at age 3 or menopause at 12.

Media exposure is a normative influence on children today, and toddlers are now skillful at using iPhone apps developed specifically for them. How might this shape their development?

Stout, 2010

> **checkpoint**
> can **you** . . .
> ▷ Discuss the concepts of maturation and individual differences?
> ▷ Give examples of the influences of family and neighborhood composition, socioeconomic status, culture, race/ethnicity, and historical context?

normative
Characteristic of an event that occurs in a similar way for most people in a group.

*Unless otherwise noted, this section is based largely on Baltes and Smith (2004).

the everyday world

STUDYING THE LIFE COURSE: GROWING UP IN HARD TIMES

Our awareness of the need to look at the life course in its social and historical context is indebted in part to Glen H. Elder Jr. In 1962, Elder arrived on the campus of the University of California, Berkeley, to work on the Oakland Growth Study, a longitudinal study of social and emotional development in 167 urban young people born around 1920. The study had begun at the outset of the Great Depression of the 1930s, when the participants, about half of whom came from middle-class homes and had spent their childhoods in the boom years of the Roaring Twenties, were entering adolescence. Elder (1974) observed how societal disruption can alter family processes and, through them, children's development.

As economic stress changed parents' lives, it changed children's lives too. Deprived families reassigned economic roles. Fathers, preoccupied with job losses and irritable about loss of status within the family, sometimes drank heavily. Mothers got outside jobs and took on more parental authority. Parents argued more. Adolescents tended to show developmental difficulties.

Still, for boys, particularly, the long-term effects of the ordeal were not entirely negative. Boys who got jobs to help out became more independent and were better able to escape the stressful family atmosphere than were girls, who helped at home. As adults, these men were strongly work oriented but also valued family activities and cultivated dependability in their children.

Effects of a major economic crisis depend on a child's stage of development, Elder noted. The children in the Oakland sample were already teenagers during the 1930s. They could draw on their own emotional, cognitive, and economic resources. A child born in 1929 would have been entirely dependent on the family. On the other hand, the parents of the Oakland children, being older, may have been less resilient in dealing with the loss of a job, and their emotional vulnerability may well have affected the tone of family life and their treatment of their children.

Fifty years after the Great Depression, in the early 1980s, a precipitous drop in the value of midwestern agricultural land pushed many farm families into debt or off the land. This farm crisis gave Elder the opportunity to replicate his earlier research on families suffering from an economic depression, this time in a rural setting. In 1989, he and his colleagues (Conger, Ge, Elder, Lorenz, & Simons 1994; Conger & Conger, 2002) interviewed 451 Iowa farm and small-town two-parent families with a seventh grader and a sibling no more than 4 years younger. The researchers
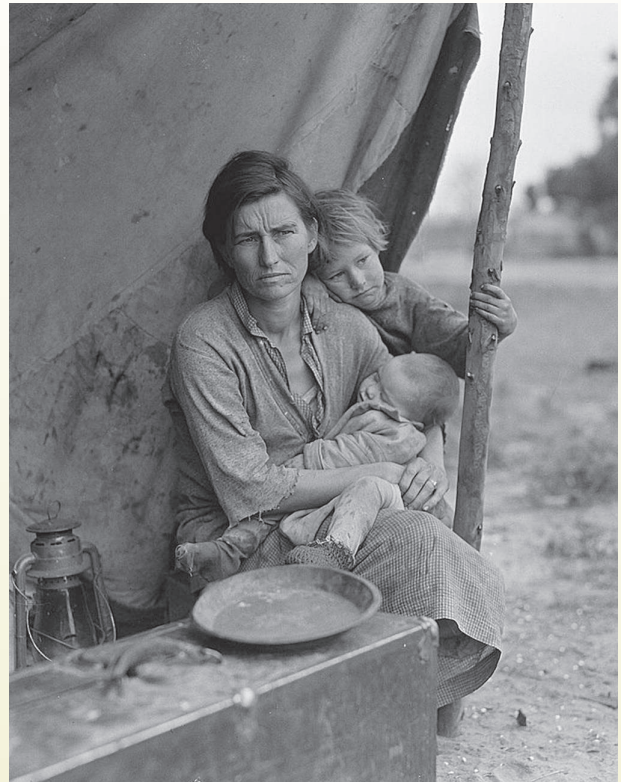
Glen Elder's studies of children growing up during the Great Depression showed how a major sociohistorical event can affect children's current and future development.

also videotaped family interactions. Because virtually no minorities lived in Iowa at the time, all the participating families were white.

As in the Depression-era study, many of these rural parents, under pressure of economic hardship, developed emotional problems. Depressed parents were more likely to fight with each other and to mistreat or withdraw from their children. The children, in turn, tended to lose self-confidence, to be unpopular, and to do poorly in school. But whereas in the 1980s this pattern of parental behavior fit both mothers and fathers, in the 1930s it was less true of mothers, whose economic role before the collapse had been more marginal (Conger & Elder, 1994; Conger et al., 1993; Elder, 1998).

The Iowa study, now called the Family Transitions Project, continues. Family members have been reinterviewed yearly, with a focus on how a family crisis experienced in early adolescence affects the transition to adulthood. The adolescents who were in seventh grade when the study

Continued

began were followed through high school. Each year they completed a list of stressful events they had experienced and were tested on measures of anxiety and depression and self-reported delinquent activities. For both boys and girls, a self-reinforcing cycle appeared. Such negative family events as economic crisis, illness, and getting in trouble at school tended to intensify sadness, fear, and antisocial conduct, which, in turn, led to future adversities, such as the divorce of parents (Kim, Conger, Elder, & Lorenz, 2003).

Elder's work, like other studies of the life course, gives researchers a window into processes of development and their links with socioecoconomic change. Eventually it may enable us to see long-term effects of early hardship on the lives of people who experienced it at different ages and in varying family situations.

Source: Unless otherwise referenced, this discussion is based on Elder (1998).

1.2

Normative history-graded influences are significant events (such as the Great Depression or World War II) that shape the behavior and attitudes of a **historical generation:** a group of people who experience the event at a formative time in their lives. For example, the generations that came of age during the Depression and World War II tend to show a strong sense of social interdependence and trust that has declined among more recent generations (Rogler, 2002). Depending on when and where they live, entire generations may feel the impact of famines, nuclear explosions, or terrorist attacks. In Western countries, medical advances as well as improvements in nutrition and sanitation have dramatically reduced infant and child mortality. As children grow up today, they are influenced by computers, digital television, the Internet, and other technological developments. Social changes such as the increase in employed mothers and the increase in single-parent households have greatly altered family life.

A historical generation is not the same as an age **cohort:** a group of people born at about the same time. A historical generation may contain more than one cohort, but not all cohorts are part of historical generations unless they experience major, shaping historical events at a formative point in their lives (Rogler, 2002).

Nonnormative influences are unusual events that have a major impact on *individual* lives because they disturb the expected sequence of the life cycle. They are either typical events that happen at an atypical time of life (such as the death of a parent when a child is young) or atypical events (such as surviving a plane crash). Some of these influences are largely beyond a person's control and may present rare opportunities or severe challenges that the person perceives as a turning point. On the other hand, young people sometimes help create their own nonnormative life events—say, by driving after drinking or by applying for a scholarship—and thus participate actively in their own development. Taken together, the three types of influences—normative age-graded, normative history-graded, and nonnormative—contribute to the complexity of human development as well as to the challenges people experience in trying to build their lives.

historical generation
A group of people strongly influenced by a major historical event during their formative period.

cohort
A group of people born at about the same time.

nonnormative
Characteristic of an unusual event that happens to a particular person or a typical event that happens at an unusual time of life.

TIMING OF INFLUENCES: CRITICAL OR SENSITIVE PERIODS

In a well-known study, Konrad Lorenz (1957), an Austrian zoologist, got newborn ducklings to follow him as they would a mother duck. Lorenz showed that newly hatched ducklings will instinctively follow the first moving object they see, whether or not it is a member of their species. This phenomenon is called **imprinting**, and Lorenz believed that it is automatic and irreversible. Usually, this instinctive bond is with the mother; but if the natural course of events is disturbed, other attachments, like the one

imprinting
Instinctive form of learning in which, during a critical period in early development, a young animal forms an attachment to the first moving object it sees, usually the mother.

to Lorenz—or none at all—can form. Imprinting, said Lorenz, is the result of a *predisposition toward learning:* the readiness of an organism's nervous system to acquire certain information during a brief critical period in early life.

A **critical period** is a specific time when a given event, or its absence, has a specific impact on development. If a necessary event does not occur during a critical period of maturation, normal development will not occur; and the resulting abnormal patterns may be irreversible (Knudsen, 1999; Kuhl, Conboy, Padden, Nelson, & Pruitt, 2005). However, the length of a critical period is not absolutely fixed; if ducklings' rearing conditions are varied to slow their growth, the usual critical period for imprinting can be extended, and imprinting itself may even be reversed (Bruer, 2001).

Do human children experience critical periods, as ducklings do? One example occurs during gestation. If a woman receives X-rays, takes certain drugs, or contracts certain diseases at certain times during pregnancy, the fetus may show specific ill effects, depending on the nature of the insult and on its timing. Many environmental influences may affect development irreversibly after pregnancy as well. If a muscle problem interfering with the ability to focus both eyes on the same object is not corrected within a critical period early in childhood, depth perception probably will not develop (Bushnell & Boudreau, 1993).

However, the concept of critical periods in humans is controversial. Because many aspects of development, even in the biological/neurological domain, have been found to show **plasticity**, or modifiability of performance, it may be more useful to think about **sensitive periods**, when a developing person is especially responsive to certain kinds of experiences (Bruer, 2001). Further research is needed to discover "which aspects of behavior are likely to be altered by environmental events at specific points in development and which aspects remain more plastic and open to influence across wide spans of development" (Parke, 2004b, p. 8). Box 1.3 discusses how the concepts of critical and sensitive periods apply to language development.

An Emerging Consensus

As the study of children has matured, a broad consensus has emerged on several fundamental points concerning child development, which sum up our introduction to this book:

1. *All domains of development are interrelated.* Although developmental scientists often look separately at the three domains of development—physical, cognitive, and psychosocial—each affects the others.

2. *Normal development includes a wide range of individual differences.* Each child, from the start, is unlike anyone else in the world. One child is outgoing, another shy. One is agile, another awkward. Some of the influences on individual development are inborn; others come from experience. Most often, these influences work together. Family characteristics, gender, social class, race/ethnicity, and the presence or absence of physical, mental, or emotional disability all affect the way a child develops within the universal processes of human maturation.

3. *Children help shape their development and influence others' responses to them.* Right from the start, through the ways in which they respond to the world around them and via the responses they evoke in others, infants mold their environment and then respond to the environment they have helped create. Influence is *bidirectional:* When babies babble and coo, adults tend to talk to them, which then makes babies "talk" more.

4. *Historical and cultural contexts strongly influence development.* Each child develops within a specific environment, bounded by time and place. A child born in the

IS THERE A CRITICAL PERIOD FOR LANGUAGE ACQUISITION?

In 1967 Eric Lenneberg (1967, 1969) proposed a critical period for language acquisition beginning in early infancy and ending around puberty. Lenneberg argued that it would be difficult, if not impossible, for a child who had not yet acquired language by the onset of puberty to do so after that age.

In 1970, a 13-year-old girl named Genie (not her real name) offered the opportunity for a test of Lenneberg's hypothesis. Genie was discovered in a suburb of Los Angeles (Curtiss, 1977; Fromkin, Krashen, Curtiss, Rigler, & Rigler, 1974; Pines, 1981; Rymer, 1993). The victim of an abusive father, she had been confined for nearly 12 years to a small room in her parents' home, tied to a potty chair, and cut off from normal human contact. When found, she recognized only her own name and the word *sorry*. Could Genie be taught to speak, or was it too late? The National Institutes of Mental Health (NIMH) funded a study to provide intensive testing and language training for Genie.

Genie's progress during the study both challenged and supported the idea of a critical period for language acquisition. Genie learned some simple words and could string them together into primitive sentences. She also learned the fundamentals of sign language. But "her speech remained, for the most part, like a somewhat garbled telegram" (Pines, 1981, p. 29). Her mother regained custody, cut her off from the NIMH researchers, and then eventually sent her into the foster care system. A series of abusive foster homes rendered Genie silent once more.

What explains Genie's initial progress and her inability to sustain it? Her understanding of her name and the single word *sorry* may mean that her language-learning mechanisms had been triggered early in the critical period, allowing later learning to occur. The timing of the NIMH language training and her ability to learn some simple words at age 13 may indicate that she was still in the critical period, though near its end. On the other hand, her extreme abuse and neglect may have impacted her so much that she could not be considered a true test of the critical period (Curtiss, 1977).

Genie's case dramatizes the difficulty of acquiring language after the early years of life, but, because of the complicating factors, it does not permit conclusive judgments about whether such acquisition is possible. Some researchers consider the prepubertal years a sensitive rather than critical period for learning language (Newport, Bavelier, & Neville, 2001; Schumann, 1997). Brain imaging research has found that even if the parts of the brain best suited to language processing are damaged early in childhood, nearly normal language development can continue as other parts of the brain take over (Boatman et al., 1999; Hertz-Pannier et al., 2002; M. H. Johnson, 1998). In fact, shifts in brain organization and utilization occur throughout the course of normal language learning (M. H. Johnson, 1998; Neville & Bavelier, 1998).

If either a critical or a sensitive period for language learning exists, what explains it? Do the brain's mechanisms for acquiring language decay as the brain matures? That would seem strange because other cognitive abilities improve. An alternative hypothesis is that this very increase in cognitive sophistication interferes with an adolescent's or adult's ability to learn a language. Young children acquire language in small chunks that can be digested readily. Older learners, when they first begin learning a language, tend to absorb a great deal at once and then may have trouble analyzing and interpreting it (Newport, 1991).

what's your view

Have you had difficulty learning a new language as an adult? If so, does this box help you understand why?

United States today is likely to have very different experiences from a child born in colonial America or from a child born in Greenland or Afghanistan.

5. *Early experience is important, but children can be remarkably resilient.* A traumatic incident or a severely deprived childhood may well have grave emotional consequences, but the life histories of countless people show that the effects of painful experience, such as growing up in poverty or the death of a parent, often can be overcome.

6. *Development in childhood affects development throughout the life span.* At one time it was believed that growth and development end, as this book does, with adolescence. Today developmental psychologists agree that development is lifelong—from womb to tomb. As long as people live, they have the potential to change.

Now that you have had a brief introduction to the field of child development and its basic concepts, we can look more closely at the issues developmental scientists think about and how they do their work. In Chapter 2, we discuss some influential theories of how development takes place and the methods investigators commonly use to study it.

summary and key terms

guidepost ❶ The Study of Child Development: Then and Now

What is child development, and how has its study evolved?

- Child development as a field of scientific study focuses on processes of change and stability from conception through adolescence.
- The scientific study of child development began toward the end of the nineteenth century. Adolescence was not considered a separate phase of development until the early twentieth century. The field of child development is now part of the study of the entire life span, or human development.
- Ways of studying child development are still evolving, making use of advanced technologies.

child development (*4*)

guidepost ❷ The Study of Child Development: Basic Concepts

What do developmental scientists study?

- The three major domains, or aspects, of development that developmental scientists study are physical, cognitive, and psychosocial. Each affects the others.
- The concept of periods of development is a social construction. In this book, child development is divided into five periods: the prenatal period, infancy and toddlerhood, early

childhood, middle childhood, and adolescence. In each period, children have characteristic developmental needs and tasks.

physical development (*6*)
cognitive development (*6*)
psychosocial development (*6*)
social construction (*7*)

guidepost ❸ Influences on Development

What influences make one child different from another?

- Influences on development come from both heredity and environment. Many typical changes during childhood are related to maturation. Individual differences increase with age.
- In some societies, the nuclear family predominates; in others, the extended family.
- Socioeconomic status (SES) affects developmental processes and outcomes through the quality of home and neighborhood environments and of nutrition, medical care, supervision, and schooling. The most powerful neighborhood influence seems to be neighborhood income. Multiple risk factors increase the likelihood of poor outcomes.
- Other important environmental influences stem from culture, ethnicity, and historical context. In large, multiethnic societies, immigrant groups often acculturate to the majority culture while preserving aspects of their own.
- Influences may be normative (age graded or history graded) or nonnormative.

- There is evidence of critical or sensitive periods for certain types of early development, but the existence of critical periods is controversial.

individual differences (*9*)

heredity (*9*)

environment (*9*)

maturation (*9*)

nuclear family (*10*)

extended family (*10*)

culture (*11*)

ethnic group (*11*)

ethnic gloss (*13*)

socioeconomic status (SES) (*13*)

risk factors (*14*)

normative (*15*)

historical generation (*17*)

cohort (*17*)

nonnormative (*17*)

imprinting (*17*)

critical period (*18*)

plasticity (*18*)

sensitive periods (*18*)

guidepost ④ An Emerging Consensus

What are six fundamental points about child development on which consensus has emerged?

- Consensus has emerged on several important points. These include (1) the interrelationship of domains of development, (2) the existence of a wide range of individual differences, (3) the bidirectionality of influence, (4) the importance of history and culture, (5) children's potential for resilience, and (6) continuity of development throughout life.

A Child's World: How We Discover It

did you know?

▷ Theories are never "set in stone"; they are always open to change as a result of new findings?

▷ Children shape their world as it shapes them?

▷ Cross-cultural research enables us to determine which aspects of development are universal and which are culturally influenced?

Here, we present an overview both of major theories of human development and of research methods used to study it. In the first part of the chapter, we explore major issues and theoretical perspectives that underlie much research in child development. In the remainder of the chapter, we look at how researchers gather and assess information so that, as you read further in this book, you will be better able to judge whether research findings and conclusions rest on solid ground.

The most exciting phrase to hear in science, the one that heralds new discoveries, is not "Eureka" but "That's funny . . ."

—Isaac Asimov

1. What purposes do theories serve, and what are two basic issues on which developmental theorists differ?

2. What are five theoretical perspectives on child development, and what are some theories that are representative of each?

3. How do developmental scientists study children, and what are the advantages and disadvantages of each research method?

4. What ethical problems may arise in research on children?

guidepost

1 What purposes do theories serve, and what are two basic issues on which developmental theorists differ?

theory
Coherent set of logically related concepts that seeks to organize, explain, and predict data.

hypotheses
Possible explanations for phenomena, used to predict the outcome of research.

People generally think theories are less well supported than laws, but in scientific terms the opposite is true. Laws are observations without explanations. Theories, by contrast, are observations with explanations. So theories have more support, not less.

Basic Theoretical Issues

When Ahmed graduated from high school with honors in math and science, his father, an award-winning engineer, beamed. "The apple doesn't fall far from the tree," he said.

Statements like that one, which abound in everyday life, are informal, or intuitive, theories about why children develop as they do. Scientists have formal theories about human development. Like laypeople's informal theories, scientific theories are not dry, abstract, or esoteric. They deal with the substance of real life.

A scientific **theory** is a set of logically related concepts or statements that seeks to describe and explain development and to predict what kinds of behavior might occur under certain conditions. Theories organize and explain *data*, the information gathered by research. As painstaking research adds, bit by bit, to the body of knowledge, theoretical concepts help us make sense of, and see connections between, isolated pieces of data.

Theory and research are interwoven strands in the intricate fabric of scientific study. Theories inspire further research and predict its results. They do this by generating **hypotheses**, tentative explanations or predictions that can be tested by further research. Research can indicate whether a theory is accurate in its predictions but cannot conclusively show a theory to be true. Theories can be disproved, but never proved. Theories change to incorporate new findings. Sometimes research supports a hypothesis and the theory on which it was based. At other times, scientists must modify their theories to account for unexpected data. Research findings often suggest additional hypotheses to be examined and provide direction for dealing with practical issues.

A theory is based on certain assumptions, which may or may not turn out to be true. For example, Charles Darwin's theory of evolution, which preceded modern cell biology, assumed that all life forms evolved from a single ancestor—an assumption that has been challenged by newer evolutionary research (Liu, 2006; Woese, 1998). Alternatively, despite the fact that Gregor Mendel's seminal work on particulate genetics had not yet been discovered by the scientific community, Darwin's theory required an explanation of how traits in their entirety could be passed on to offspring. At the time he developed his theory, no such explanation existed. Darwin logically surmised that such a process must exist, and this aspect of his work was later supported.

Developmental science cannot be completely objective. Theories and research about human behavior are products of very human individuals, whose inquiries and

interpretations are inevitably influenced by their own values and experience. In striving for greater objectivity, researchers must scrutinize how they and their colleagues conduct their work, the assumptions on which it is based, and how they arrive at their conclusions.

Throughout this book, we examine many, often conflicting, theories. In assessing them, it is important to keep in mind that they reflect the outlooks of the human beings who originated them. The way theorists explain development depends in part on their assumptions about two basic issues: (1) whether children are active or reactive in their own development, and (2) whether development is continuous or occurs in stages. A third issue, whether development is more influenced by heredity or by environment, was introduced in Chapter 1 and is discussed more fully in Chapter 3.

ISSUE 1: IS DEVELOPMENT ACTIVE OR REACTIVE?

Psychology is an outgrowth of philosophy in many ways, and indeed philosophers have frequently grappled with questions of psychology and development. Exactly how does the child learn? What happens during that process?

There have been various perspectives on these issues. For example, the eighteenth-century English philosopher John Locke held that a young child is a *tabula rasa*—a "blank slate"—upon which society "writes." How the child developed, in either positive or negative ways, depended entirely upon experiences. In contrast, the French philosopher Jean Jacques Rousseau believed that children are born "noble savages" who develop according to their own positive natural tendencies if not corrupted by society. This debate remains important today, although it is informed by what we currently understand. In modern terms, we speak of heredity and environmental influences. We introduced this issue in Chapter 1, and we will address it more fully in Chapter 3.

There are additional philosophical debates about development, and the same basic issues that philosophers argued about support the classic and continuing theories that psychologists use to make sense of development. In this section, we address the debate about active and reactive development. Psychologists who believe in reactive development conceptualize the developing child as a hungry sponge that soaks up experiences and is shaped by this input over time. Psychologists who believe in active development argue that people seek to create experiences for themselves and are motivated to learn about the world around them. Things aren't just happening to them, they are involved in making their world what it is.

These issues are also applicable in the real world. For instance, if you believe in the worth of programs like Head Start, that implies you believe in the power of environmental influences. If you think such programs are not worth the financial investment, that implies you feel heredity is more important. Which do you believe?

Remember Calvin and Hobbes comic strips? The names of the two primary characters were drawn from other philosophers who speculated on our essential nature.

Mechanistic Model The debate over Locke's and Rousseau's philosophies led to two contrasting models, or images, of development: mechanistic and organismic. Locke's view was the forerunner of the **mechanistic model**. In this model, people are like machines that react to environmental input (Pepper, 1942, 1961). A machine is the sum of its parts. To understand it, we can break it down into its smallest components and then reassemble it.

Machines do not operate of their own volition; they react automatically and passively to physical forces or inputs. Fill a car with gas, turn the ignition key, press the accelerator, and the vehicle will move. In the mechanistic view, human behavior is much the same: It results from the operation of biological parts in response to external or internal stimuli. If we know enough about how the human "machine" is put together and about the forces acting on it, we can predict what the person will do.

Mechanistic research seeks to identify the factors that make people behave as they do. For example, in seeking to explain why some high school students drink too much

mechanistic model
Model that views human development as a series of predictable responses to stimuli.

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Mechanistic and Organismic Models of Development

alcohol, a mechanistic theorist might look for environmental influences, such as advertising and whether the student's friends are heavy drinkers.

Organismic Model Rousseau was the precursor of the **organismic model**. This model sees children as active, growing organisms that set their own development in motion (Pepper, 1942, 1961). They initiate events; they do not just react. Thus, the driving force for change is internal. Environmental influences do not *cause* development, though they can speed or slow it. Because human behavior is viewed as an organic whole, it cannot be predicted by breaking it down into simple responses to environmental stimulation. The meaning of a family relationship, for example, goes beyond what can be learned from studying its individual members and their day-to-day interactions. An organismic theorist, in studying why some high school students drink too much, would be likely to look at what kinds of situations they choose to participate in, and with whom. Do they choose friends who prefer to party or to study?

For organicists, development has an underlying, orderly structure, though it may not be obvious from moment to moment. As a fertilized egg cell develops into an embryo and then into a fetus, it goes through a series of qualitative changes not overtly predictable from what came before. Swellings on the head become eyes, ears, mouth, and nose. The brain begins to coordinate breathing, digestion, and elimination. Sex organs form. Similarly, organicists describe development after birth as a progressive sequence of stages, moving toward full maturation.

ISSUE 2: IS DEVELOPMENT CONTINUOUS OR DISCONTINUOUS?

The mechanistic and organismic models also differ on the second issue: Is development *continuous*, that is, gradual and incremental, or *discontinuous*, that is, abrupt or uneven? Mechanist theorists see development as continuous: as occurring in small incremental stages (Figure 2.1a). Development is always governed by the same processes and involves the gradual refinement and extension of early skills into later abilities, allowing one to make predictions about future characteristics on the basis of past performance. This type of change is known as **quantitative change**—a change in number or amount, such as height, weight, or vocabulary size. A primary characteristic of quantitative change is that you are measuring fundamentally the same thing over time, even if there might be more or less of it.

> Be careful here. If you google "quantitative" and "qualitative," you are likely to find web pages that focus on quantitative and qualitative statistics, not change. Although these are somewhat related concepts, they are not the same thing.

Organismic theorists see development as discontinuous; as marked by the emergence of new phenomena that could not be easily predicted on the basis of past functioning. Development at different points in the lifespan is, in this view, fundamentally different in nature—not just more or less of the same thing. It is a change in kind, structure, or organization, not just in number. This type of change is known as **qualitative change**.

Organismic theorists are proponents of what are called *stage theories*. In these approaches, development is seen as occurring in a series of distinct stages, like stair steps (Figure 2.1b). At each stage, what is going on is fundamentally different from what was happening at the previous stage. Each stage builds on the previous one and prepares the way for the next. Thus, stages cannot be skipped and development only proceeds in a positive direction. Moreover, it is believed that these processes are universal and account for the development of all humans everywhere, although the particular timing may vary a bit.
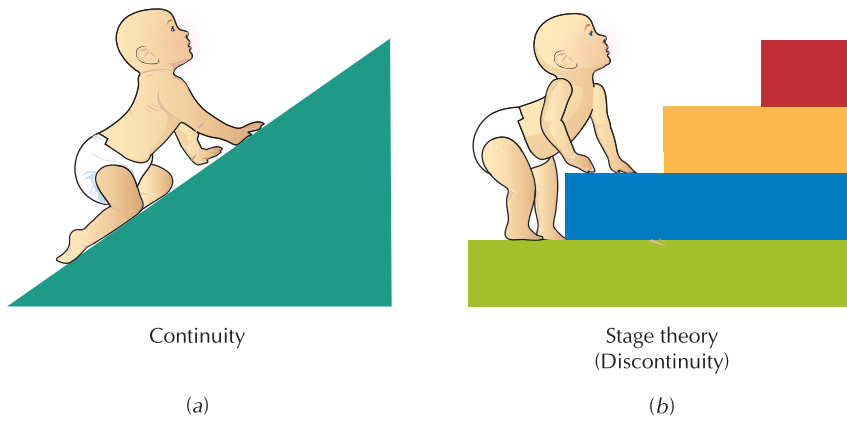
FIGURE 2.1

Quantitative and Qualitative Change

A major difference among developmental theories is (a) whether it proceeds continuously, as learning theorists and information-processing theorists propose, or (b) whether development occurs in distinct stages, as Freud, Erikson, and Piaget maintained.

Theoretical Perspectives

Theories can generally be characterized as either mechanistic or organismic, and as describing change as either continuous or discontinuous, even if those beliefs are not directly stated. But all developmental theories have implicit assumptions that underlie their approach. These assumptions influence the questions researchers ask, the methods they use, and the ways they interpret data. Therefore, to evaluate and interpret research, it is important to recognize the theoretical perspective on which it is based.

Five major perspectives underlie much influential theory and research on child development: (1) psychoanalytic, which focuses on unconscious emotions and drives; (2) learning, which studies observable behavior; (3) cognitive, which analyzes thought processes; (4) contextual, which emphasizes the impact of the historical, social, and cultural context; and (5) evolutionary/sociobiological, which considers evolutionary and biological underpinnings of behavior. Following is a general overview of the basic propositions, methods, and causal emphasis of each of these perspectives and some leading theorists within each perspective. These are summarized in Table 2.1 on page 28 and will be referred to throughout this book.

PERSPECTIVE 1: PSYCHOANALYTIC

Sigmund Freud (1856–1939) was a Viennese physician who had a profound effect upon the field of psychology. He was the originator of the **psychoanalytic perspective**, and believed in reactive development, as well as qualitative changes over time. Freud proposed that humans were born with a series of innate, biologically based drives such as hunger, sex, and aggression. He thought that people were highly motivated to satisfy their urges, and that much of development involved learning how to do so in socially acceptable ways. In addition to these biologically based influences, Freud also believed that early experiences shaped later functioning, and thus drew attention to childhood as an important precursor to adult behavior. While this seems obvious to us now, at the time he developed his theories most psychologists did not acknowledge childhood as a formative period on the lifespan. Freud also believed in and promoted the idea that there was a vast, hidden reserve to our psyche, and what we consciously know about and experience is only the small tip of the iceberg of who we are. Following is a summary of Freud's theory of psychosexual development. Other theorists, including Erik H. Erikson, whom we discuss next, have expanded and modified Freud's theory.

Sigmund Freud: Psychosexual Development Freud (1953, 1964a, 1964b) believed that people are born with biological drives that must be redirected to make it possible to live in society. He proposed three hypothetical parts of the personality: the id, the ego, and the superego. Newborns are governed by the *id*, which operates under the pleasure

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Theoretical Perspectives

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Application of Theories

psychoanalytic perspective
View of human development as being shaped by unconscious forces.

Although this is not originally what it stood for, an easy way to remember what the id wants is by remembering "instinctual desires."

TABLE 2.1 Five Perspectives on Human Development

Perspective	Important Theories	Basic Propositions	Stage-Oriented	Causal Emphasis	Active/ Reactive Individual
Psycho-analytic	Freud's psychosexual theory	Behavior is controlled by powerful unconscious urges.	Yes	Innate factors modified by experience	Reactive
	Erikson's psychosocial theory	Personality is influenced by society and develops through a series of crises.		Interaction of innate and experiential factors	Active
Learning	Behaviorism, or traditional learning theory (Pavlov, Skinner, Watson)	People are responders; the environment controls behavior.	No	Experience	Reactive
	Social learning (social cognitive) theory (Bandura)	Children learn in a social context by observing and imitating models; they are active contributors to learning.		Experience modified by innate factors	Active and reactive
Cognitive	Piaget's cognitive-stage theory	Qualitative changes in thought occur between infancy and adolescence. Children are active initiators of development.	Yes	Interaction of innate and experiential factors	Active
	Vygotsky's sociocultural theory	Social interaction is central to cognitive development.	No	Experience	
	Information-processing theory	Human beings are processors of symbols.	No	Interaction of innate and experiential factors	
Contextual	Bronfenbrenner's bioecological theory	Development occurs through interaction between a developing person and five surrounding, interlocking contextual systems of influences, from microsystem to chronosystem.	No	Interaction of innate and experiential factors	Active
Evolutionary/ sociobiological	Evolutionary Psychology Bowlby's attachment theory	Human beings are the product of adaptive processes; evolutionary and biological bases for behavior and predisposition toward learning are important.	No	Interaction of innate and experiential factors	Active and reactive (theorists vary)

principle—the drive to seek immediate satisfaction of needs and desires. When gratification is delayed, as it is when infants have to wait to be fed, they begin to see themselves as separate from the outside world. The *ego*, which represents reason, develops gradually during the first year or so of life and operates under the reality principle. The ego's aim is to find realistic ways to gratify the id that are acceptable to the

superego, which develops at about age 5 or 6. The *superego* includes the conscience and incorporates socially approved "shoulds" and "should nots" into the child's own value system. The superego is highly demanding; if its standards are not met, a child may feel guilty and anxious. The ego mediates between the impulses of the id and the demands of the superego.

Freud proposed that personality forms through unconscious childhood conflicts between the inborn urges of the id and the requirements of civilized life. These conflicts occur in an unvarying sequence of five maturation-based stages of **psychosexual development** (Table 2.2), in which sensual pleasure shifts from one body zone to another—from the mouth to the anus and then to the genitals. At each stage, the behavior that is the chief source of gratification (or frustration) changes—from feeding to elimination and eventually to sexual activity.

Freud considered the first three stages—those of the first few years of life—to be crucial for personality development. According to Freud, if children receive too little or too much gratification in any of these stages, they are at risk of *fixation*—an arrest in development that can show up in adult personality. For example, babies whose needs are not met during the *oral stage*, when feeding is the main source of sensual pleasure, may grow up to become nail-biters or smokers or to develop "bitingly" critical personalities. A person who, as a toddler, had too-strict toilet training may be fixated at the *anal stage*, when the chief source of pleasure was moving the bowels. Such a person may be obsessively clean, rigidly tied to schedules and routines, or defiantly messy.

According to Freud, a key event in psychosexual development occurs in the *phallic stage* of early childhood. Boys develop sexual attachment to their mothers, and girls to their fathers, and they have aggressive urges toward the same-sex parent, whom they regard as a rival. Freud called these developments the *Oedipus* and *Electra complexes*. Girls, according to Freud, experience *penis envy*, the repressed wish to possess a penis and the power it stands for.

Children eventually resolve their anxiety over these feelings by identifying with the same-sex parent and move into the *latency stage* of middle childhood, a period of relative emotional calm and intellectual and social exploration. They redirect their sexual energies into other pursuits, such as schoolwork, relationships, and hobbies.

The *genital stage*, the final one, lasts throughout adulthood. The sexual urges repressed during latency now resurface to flow in socially approved channels, which Freud defined as heterosexual relations with persons outside the family of origin.

Freud's theory made historic contributions and inspired a whole generation of followers, some of whom took psychoanalytic theory in new directions. Some of Freud's ideas, such as his notions of the Oedipus crisis and penis envy, now are widely considered obsolete. Others, such as the concepts of the id and superego, cannot be scientifically tested. While Freud opened our eyes to the importance of early sexual urges, many psychoanalysts today reject his narrow emphasis on sexual and aggressive drives to the exclusion of other motives. Although the specific components of his theory generally have not been supported in research, several of his central themes have nonetheless "stood the test of time" (Westen, 1998, p. 334). Freud made us aware of the importance of unconscious thoughts, feelings, and motivations; the role of childhood experiences in forming personality; the ambivalence of emotional responses, especially responses to parents; the role of mental representations of the self and others in the establishment of intimate relationships; and the path of normal development from an immature, dependent state to a mature, interdependent one. In all these ways, Freud left an indelible mark on psychoanalysis and developmental psychology (Gedo, 2001; Westen, 1998).

We need to remember that Freud's theory grew out of his place in history and in society. Freud based his theories about normal development not on a population of average children but on a clientele of upper-middle-class adults, mostly women, in therapy. His concentration on the influences of sexual urges and early experience did not take into account other, and later, influences on personality—including the influences of society and culture, which many heirs to the Freudian tradition, such as Erik Erikson, stress.
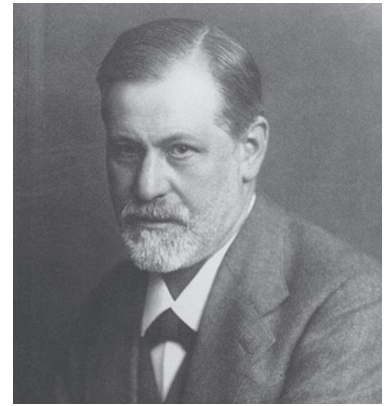
The Viennese physician Sigmund Freud developed an influential but controversial theory of childhood emotional development.

psychosexual development
In Freudian theory, an unvarying sequence of stages of personality development during infancy, childhood, and adolescence, in which gratification shifts from the mouth to the anus and then to the genitals.

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Psychoanalytic Perspective

TABLE 2.2 Development Stages according to Various Theories

Psychosexual Stages (Freud)	Psychosocial Stages (Erikson)	Cognitive Stages (Piaget)
Oral *(birth to 12–18 months)*. Baby's chief source of pleasure involves mouth-oriented activities (sucking and feeding).	**Basic trust versus mistrust** *(birth to 12–18 months)*. Baby develops sense of whether world is a good and safe place. Virtue: hope.	**Sensorimotor** *(birth to 2 years)*. Infant gradually becomes able to organize activities in relation to the environment through sensory and motor activity.
Anal *(12–18 months to 3 years)*. Child derives sensual gratification from withholding and expelling feces. Zone of gratification is anal region, and toilet training is important activity.	**Autonomy versus shame and doubt** *(12–18 months to 3 years)*. Child develops a balance of independence and self-sufficiency over shame and doubt. Virtue: will.	**Preoperational** *(2 to 7 years)*. Child develops a representational system and uses symbols to represent people, places, and events. Language and imaginative play are important manifestations of this stage. Thinking is still not logical.
Phallic *(3 to 6 years)*. Child becomes attached to parent of the other sex and later identifies with same-sex parent. Supergo develops. Zone of gratification shifts to genital region.	**Initiative versus guilt** *(3 to 6 years)*. Child develops initiative when trying out new activities and is not overwhelmed by guilt. Virtue: purpose.	
Latency *(6 years to puberty)*. Time of relative calm between more turbulent states.	**Industry versus inferiority** *(6 years to puberty)*. Child must learn skills of the culture or face feelings of incompetence. Virtue: skill.	**Concrete operations** *(7 to 11 years)*. Child can solve problems logically if they are focused on the here and now but cannot think abstractly.
Genital *(puberty through adulthood)*. Reemergence of sexual impulses of phallic stage, channeled into mature adult sexuality.	**Identity versus identity confusion** *(puberty to young adulthood)*. Adolescent must determine sense of self ("Who am I?") or experience confusion about roles. Virtue: fidelity. **Intimacy versus isolation** *(young adulthood)*. Person seeks to make commitments to others; if unsuccessful, may suffer from isolation and self-absorption. Virtue: love. **Generativity versus stagnation** *(middle adulthood)*. Mature adult is concerned with establishing and guiding the next generation or else feels personal impoverishment. Virtue: care. **Integrity versus despair** *(late adulthood)*. Elderly person achieves acceptance of own life, allowing acceptance of death, or else despairs over inability to relive life. Virtue: wisdom.	**Formal operations** *(11 years through adulthood)*. Person can think abstractly, deal with hypothetical situations, and think about possibilities.

Note: All ages are approximate.