CHILD 2e

Gabriela Martorell

Mc Graw Hill Education

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Gabriela Martorell

Gabriela Alicia Martorell was born in Seattle, Washington, but moved as a toddler to Guatemala. At eight, she returned to the United States and lived in Northern California until leaving for her undergraduate training at the University of California, Davis. After obtaining her B.S. in Psychology, she earned her Ph.D. in Developmental and Evolutionary Psychology at the University of California, Santa Barbara. Since that time, she has taught at Portland State University, Norfolk State University, and her current full-time position as a Full Professor of Psychology at Virginia Wesleyan University.

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PREFACE

Child, second edition, is designed to be a brief but thorough account of human development from conception through adolescence, exposing students to culture and diversity and immersing them in practical application. *Child* combines a commitment to scholarly content, critical thinking, and real-life application of theory with a visually engaging and dynamic, interactive format. Written from a developmental framework and borrowing from multiple traditions and theoretical perspectives, *Child* also addresses the major periods of development and focuses on the important biological, psychological, and social forces driving change, highlighting theoretical distinctions, research findings, and new directions in the field. *Child* will engage your students and encourage the application of psychological concepts to everyday life.

Paired with McGraw-Hill Education **Connect**, a digital assignment and assessment platform that strengthens the link between faculty, students, and course work, instructors and students accomplish more in less time. Connect for Child Development includes assignable and assessable videos, quizzes, exercises, and interactivities, all associated with learning objectives. Interactive assignments and videos allow students to experience and apply their understanding of psychology to the world with fun and stimulating activities.

Diversity

In response to requests from faculty like you, substantial space has been devoted to addressing issues of diversity. When relevant, each chapter includes current U.S. statistics drawn from census data and national governmental databases, including not just major population trends but also demographic and statistical information on ethnic and racial minorities. In many cases, information on global statistics, trends, and cultural differences has been included as well.

Additionally, each chapter includes a *Perspectives on Diversity* feature. In this feature, a cross-cultural issue of interest is addressed from a global perspective. These features address a wide variety of topics, including, for example, cultural differences in beliefs about conception and fertility or attitudes toward corporal punishment or research-based features on topics such as prenatal care and infant mortality. A complete listing of *Perspectives on Diversity* can be found on page xvi.

Other forms of diversity have also been included. For example, the influence of socioeconomic status is highlighted for topics such as low birth weight, school achievement, tested IQ, and family relationships. Information is also included on different family structures, including gay and lesbian parents, stepparents, divorced parents, and those families in which adults remain single by choice.

Current Research

Child, second edition, draws a current picture of the state of the field. In well-established areas of psychology, there is an emphasis on the inclusion of review articles and meta-analyses in order to capture the major trends found through decades of psychological research. In research areas with less information available, the emphasis is on the inclusion of the newest research available in that area.

The second edition of *Child* features expanded and updated coverage of many key areas, including brain development, gender differences and gender typing, aggression and bullying, and the influences of media on development. Topical areas that have arisen in the public consciousness in recent years have also been included. For example, new sections in the second edition examine topics such as opioid use during pregnancy, cultural influences on motor development, alcohol and nicotine use in adolescence, and transgender children.

Better Data, Smarter Revision, Improved Results

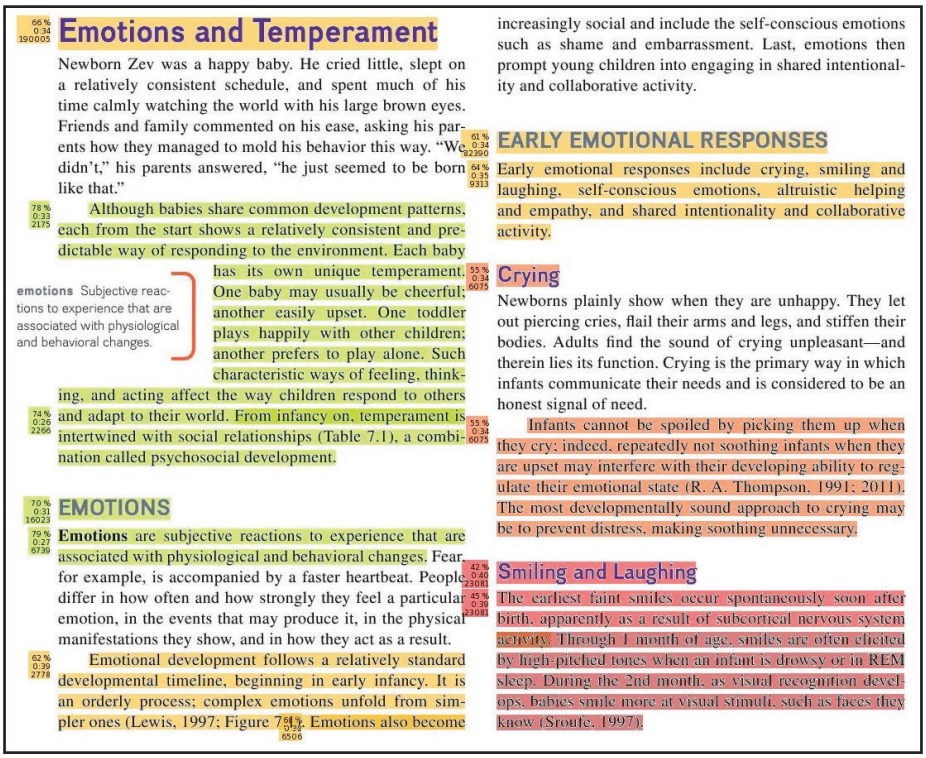
Students helped inform the revision of *Child*. Content revisions were informed by data collected anonymously through McGraw-Hill Education's SmartBook®:

Step 1. Data points showing concepts that caused students the most difficulty were anonymously collected from the SmartBook for the first edition of *Child*.

Step 2. The data were provided to the author in the form of a Heat Map, which graphically illustrates "hot spots" in the text that affect student learning (see image p. xviii).

Step 3. The author used the Heat Map data to refine the content and reinforce student comprehension in the new edition. Additional quiz questions and assignable activities were created for use in Connect to further support student success.

Because the Heat Map gave the author empirically based feedback at the paragraph and even sentence level, she was able to develop the new edition using precise student data that pinpointed concepts that gave students the most difficulty.



Emotions and Temperament

Newborn Zev was a happy baby. He cried little, slept on a relatively consistent schedule, and spent much of his time calmly watching the world with his large brown eyes. Friends and family commented on his ease, asking his parents how they managed to mold his behavior this way. "We didn't," his parents answered, "he just seemed to be born like that."

Although babies share common development patterns, each from the start shows a relatively consistent and predictable way of responding to the environment. Each baby has its own unique temperament. One baby may usually be cheerful; another easily upset. One toddler plays happily with other children; another prefers to play alone. Such characteristic ways of feeling, thinking, and acting affect the way children respond to others and adapt to their world. From infancy on, temperament is intertwined with social relationships (Table 7.1), a combination called psychosocial development.

emotions Subjective reactions to experience that are associated with physiological and behavioral changes.

EMOTIONS

Emotions are subjective reactions to experience that are associated with physiological and behavioral changes. Fear, for example, is accompanied by a faster heartbeat. People differ in how often and how strongly they feel a particular emotion, in the events that may produce it, in the physical manifestations they show, and in how they act as a result.

Emotional development follows a relatively standard developmental timeline, beginning in early infancy. It is an orderly process; complex emotions unfold from simpler ones (Lewis, 1997; Figure 7.1). Emotions also become increasingly social and include the self-conscious emotions such as shame and embarrassment. Last, emotions then prompt young children into engaging in shared intentionality and collaborative activity.

EARLY EMOTIONAL RESPONSES

Early emotional responses include crying, smiling and laughing, self-conscious emotions, altruistic helping and empathy, and shared intentionality and collaborative activity.

Crying

Newborns plainly show when they are unhappy. They let out piercing cries, flail their arms and legs, and stiffen their bodies. Adults find the sound of crying unpleasant—and therein lies its function. Crying is the primary way in which infants communicate their needs and is considered to be an honest signal of need.

Infants cannot be spoiled by picking them up when they cry; indeed, repeatedly not soothing infants when they are upset may interfere with their developing ability to regulate their emotional state (R. A. Thompson, 1991; 2011). The most developmentally sound approach to crying may be to prevent distress, making soothing unnecessary.

Smiling and Laughing

The earliest faint smiles occur spontaneously soon after birth, apparently as a result of subcortical nervous system activity. Through 1 month of age, smiles are often elicited by high-pitched tones when an infant is drowsy or in REM sleep. During the 2nd month, as visual recognition develops, babies smile more at visual stimuli, such as faces they know (Sroufe, 1997).

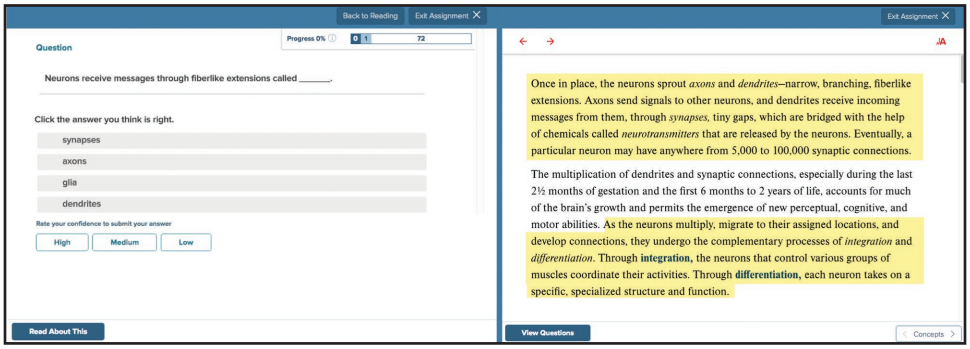
Support for Student Engagement

Child, second edition, offers a dynamic learning experience designed for today's students. The research-based content of *Child* is written around key learning objectives to support student mastery. *Did You Know?* features introduce relevant, interesting facts about concepts to further engage students. *Child* supports application of concepts and theories to the real world through the features *What Do You Do?* and *What Do You Think?* and with textual examples. The *Summary* and *Practice Quiz* at the end of each chapter provide students with opportunities to assess and confirm their learning.

Provide a Smarter Text and Better Value

Mc Graw Hill Education | SMARTBOOK®

New to this edition, **SmartBook** is now optimized for mobile and tablet and is accessible for students with disabilities. Content-wise, it has been enhanced with improved learning objectives that are measurable and observable to improve student outcomes. SmartBook personalizes learning to individual student needs, continually adapting to pinpoint knowledge gaps and focus learning on topics that need the most attention. Study time is more productive and, as a result, students are better prepared for class and coursework. For instructors, SmartBook tracks student progress and provides insights that can help guide teaching strategies.



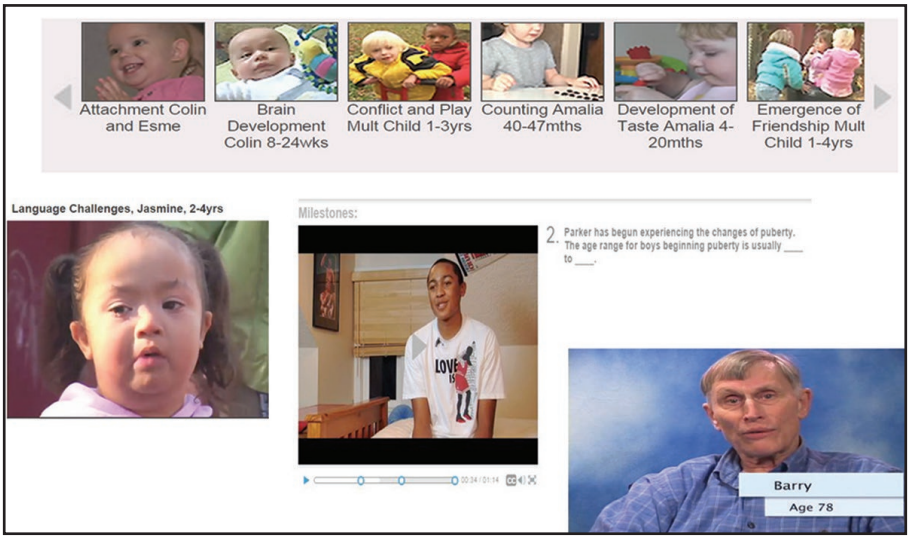
Powerful Reporting

Whether a class is face-to-face, hybrid, or entirely online, Connect for Child Development provides tools and analytics to reduce the amount of time instructors need to administer their courses. Easy-to-use course management tools allow instructors to spend less time administering and more time teaching, while easy-to-use reporting features allow students to monitor their progress and optimize their study time.

- The **At-Risk Student Report** provides instructors with one-click access to a dashboard that identifies students who are at risk of dropping out of the course due to low engagement levels.
- The **Category Analysis Report** details student performance relative to specific learning objectives and goals, including APA outcomes and levels of Bloom's taxonomy.
- **Connect Insight** is a one-of-a-kind visual analytics dashboard—now available for both instructors and students—that provides at-a-glance information regarding student performance.
- The **LearnSmart Reports** allow instructors and students to easily monitor progress and pinpoint areas of weakness, giving each student a personalized study plan to achieve success.

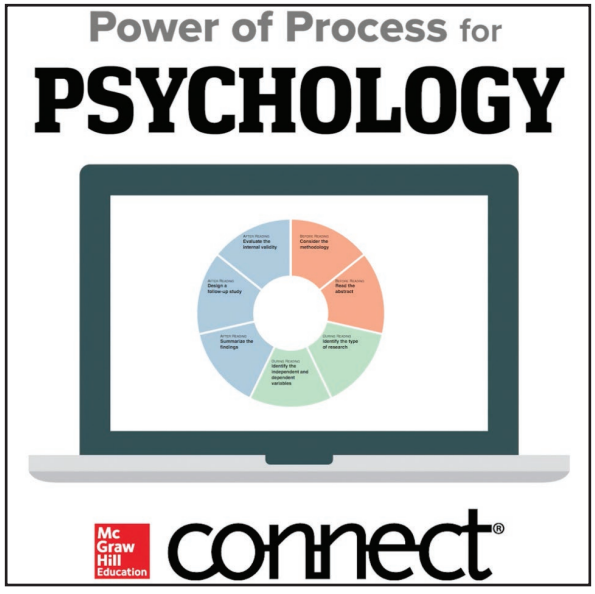
Real People, Real World, Real Life

At the higher end of Bloom's taxonomy, the **McGraw-Hill Education Milestones video series** offers an observational tool that allows students to experience life as it unfolds, from infancy to late adulthood. This groundbreaking, longitudinal video series tracks the development of real children as they progress through the early stages of physical, social, and emotional development in their first few weeks, months, and years of life. Assignable and assessable within Connect, Milestones also includes interviews with adolescents and adults to reflect development throughout the entire life span.



Preparing Students for Higher-Level Thinking

Also at the higher end of Bloom's, and new to the second edition, **Power of Process for Child Development** helps students improve critical-thinking skills and allows instructors to assess these skills efficiently and effectively in an online environment. Available through Connect, preloaded journal articles are available for instructors to assign. Using a scaffolded framework such as understanding, synthesizing, and analyzing, Power of Process moves students toward higher-level thinking and analysis.



Inform and Engage on Psychological Concepts

At the lower end of Bloom's taxonomy, students are introduced to **Concept Clips**—the dynamic, colorful graphics and stimulating animations that break down some of psychology's most difficult concepts in a step-by-step manner, engaging students and aiding in retention. They are assignable and assessable in Connect or can be used as a jumping-off point in class. Complete with audio narration, Concept Clips focus on topics such as object permanence and conservation, as well as theories and theorists like Bandura's social cognitive theory, Vygotsky's sociocultural theory, and Kuhl's language development theory.

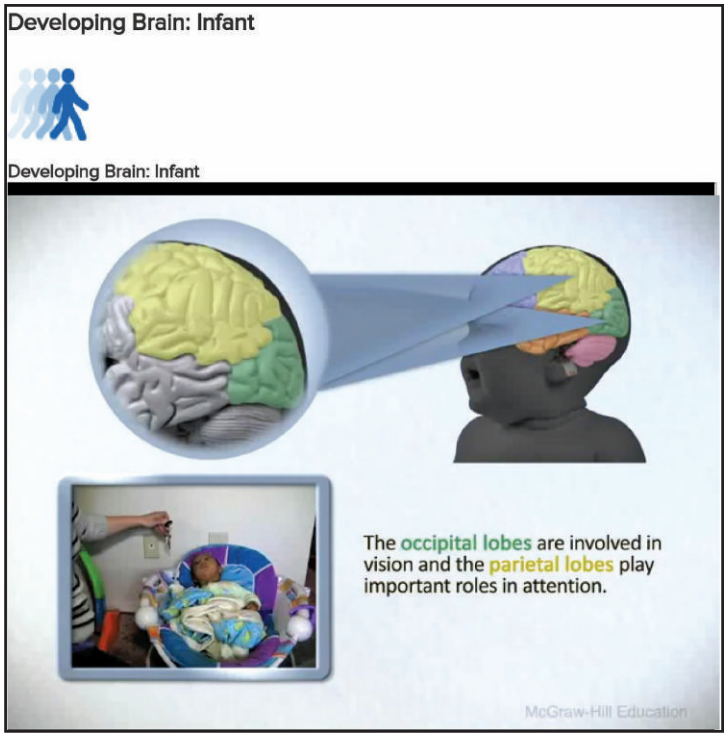
Also for the lower levels of Bloom's Taxonomy:

- **NewsFlash:** New to the second edition, NewsFlash activities tie current news stories to key psychological principles and learning objectives. After interacting with a contemporary news story, students are assessed on their ability to make the connection between real life and research findings.
- **Interactivities:** Assignable through Connect, Interactivities engage students with content through experiential activities. New and updated activities include Neurons, Research Ethics, Prenatal Development, Kohlberg's Moral Reasoning, and Gardner's Theory of Multiple Intelligences.

Online Instructor Resources

The resources listed here accompany *Child*, second edition. Please contact your McGraw-Hill representative for details concerning the availability of these and other valuable materials that can help you design and enhance your course.

- **Instructor's Manual:** Broken down by chapter, this resource provides chapter outlines, suggested lecture topics, classroom activities and demonstrations, suggested student research projects, essay questions, and critical-thinking questions.
- **Test Bank and Computerized Test Bank:** This comprehensive Test Bank includes more than 1,500 multiple-choice, true-false, and short essay questions. Organized by chapter, the questions are designed to test factual, applied, and conceptual understanding. All test questions are available within TestGen™ software.
- **PowerPoint Slides:** The PowerPoint presentations, now with improved accessibility, highlight the key points of the chapter and include supporting visuals. All of the slides can be modified to meet individual needs.



Chapter-by-Chapter List of Changes

Every chapter has been extensively revised and updated for the second edition, with new research findings, updated statistics, and expanded coverage of key topics.

Chapter 1 Introduction to Child Development

- New section on fields of study in child development.
- Expanded description of genetic and environmental influences on development.
- Updated statistics on U.S. household composition.
- Updated statistics on ethnic minority populations and trends in the United States.
- *Perspectives on Diversity* feature updated with demographic changes, effects of implementation of the Affordable Care Act, and potential changes to health insurance coverage under the new presidential administration.
- Added discussion of diversity within ethnic categories and ethnic gloss.
- Expanded discussion of active versus passive development and of continuous versus discontinuous development.
- Expanded discussion of Erikson's theory of psychosocial development.
- Added information about the history of learning theoretical approaches and why they gained prominence in the scientific community.
- Expanded description of Pavlov's research.
- Added specific examples of classical conditioning, positive and negative reinforcement and punishment, and the use of behavioral modification.
- Added critique of learning theories as an overarching framework of development.
- Expanded example of the processes of assimilation and accommodation.
- Added a specific example of scaffolding.
- New discussion of Vygotsky's experimental approach and expanded discussion of his impact on the field.
- New example of how quantitative data can be used to infer internal mental processes in information processing research.
- Added descriptions of each of Bronfenbrenner's systems, including the microsystem, mesosystem, exosystem, macrosystem, and chronosystem.
- Expanded descriptions of evolutionary theory and evolutionary psychology.
- New section on quantitative and qualitative research.
- Added information on qualitative research methods and goals.
- Expanded section on self-report measures.
- Added information on observer bias.
- Expanded information on pros and cons of case studies.
- New example of a spurious correlation.
- New material on operational definitions.
- New section on random assignment.
- Expanded description of field experiments.
- New material on the pros and cons of cross-sectional and longitudinal research designs.

Chapter 2 Conception, Heredity, and Environment

- Expanded discussion on causes of infertility.
- Updated statistics on infertility and the use of artificial reproductive technologies.
- Added coverage of the risks of multiple pregnancies and new guidelines for transfer of multiple embryos.
- Updated information and statistics on adoption.
- Revised discussion of recessive and dominant inheritance patterns.
- Expanded discussion of multifactorial transmission and epigenetic changes.
- Added material on racial and ethnic variations in prevalence of birth disorders.
- Revised discussion of heritability.
- Expanded discussion and examples of canalization and range of reaction.
- Expanded examples for nonshared environmental influences in the family.
- Expanded discussion of, and updated research on, the interaction of genes and environment on obesity, temperament, and schizophrenia.

Chapter 3 Pregnancy and Prenatal Development

- Expanded description of the placenta.
- Updated and expanded statistics on miscarriage.
- Expanded information on pain perception in fetuses.
- Updated research on auditory perception and auditory memory in fetuses.
- Updated information on weight gain and nutritional recommendations in pregnancy.
- Updated global statistics on malnutrition during pregnancy.
- Differentiation of malnutrition as a result of calorie deficit versus nutrient deficit.
- New information on the effects of Zika exposure during pregnancy.
- Updated information on rubella outbreaks in the United States.
- Revised section on maternal anxiety and stress.
- Updated statistics on maternal age.
- Expanded information on the influence of environmental hazards on pregnancy.

- New section on the influence of opioid exposure on pregnancy outcomes and neonatal abstinence syndrome.
- Expanded information on the transmission of alcohol and drugs through breast milk.
- Expanded information on the effects of tobacco smoke on pregnancy.
- Updated information on the risks associated with caffeine usage during pregnancy.
- Updated information on the effects of marijuana, cocaine, and methamphetamine use during pregnancy.
- Updated and expanded information on paternal factors in pregnancy.
- Added information on prenatal cell-free DNA scans.
- Updated *Perspectives on Diversity* feature on disparities in prenatal care around the world.

Chapter 4 Birth and the Newborn

- Updated statistics on childbirth, birth complications, and maternal mortality in the United States.
- New global statistics on childbirth, birth complications, and maternal mortality.
- Expanded information and updated research on outcomes associated with the use of doulas during childbirth.
- Expanded information on developmental changes and cultural variations in infant sleep patterns.
- Updated global and U.S. statistics on low-birth-weight babies.
- New information on the link between sleep organization and outcomes in preterm infants.
- Updated research on low-birth-weight babies, including long-term outcomes.
- Updated statistics on postmature infants.
- Updated statistics and research on stillbirth.
- Expanded information on neurological basis of parental bonding and on fathers' involvement in caregiving and play.

Chapter 5 Physical Development and Health, 0 to 3

- Expanded information on growth rates in the first 3 years of life.
- Added information on teething.
- Updated statistics on U.S. breast-feeding rates.
- Expanded information and new research on obesity in infancy.
- New section on malnutrition in infancy.
- New section on brain cells, including information on integration and differentiation of neurons.
- New section on myelination of neural pathways.
- Updated research on pain perception in newborns.
- Expanded information on the development of smell and taste and adaptive nature of taste preferences.
- Updated research on auditory discrimination in infancy.
- New information on infant preferences for and ability to discriminate facial stimuli.
- Updated research on visually directed reaching in infants and on haptic perception.
- New section on cultural influences on motor development.
- Updated statistics and information on global and U.S. infant mortality.
- Updated statistics on U.S. racial and ethnic disparities in infant mortality rates.
- Updated statistics and information on sudden infant death syndrome (SIDS), child injuries, and child maltreatment rates.
- Updated global and U.S. statistics and information on vaccination rates.
- Updated research on nonorganic failure to thrive in infancy and toddlerhood.
- Updated research on characteristics of abusive parents and household environments.
- New information on long-term outcomes of children placed in foster care.
- Expanded and updated information on long-term effects of maltreatment.

Chapter 6 Cognitive Development, 0 to 3

- Updated research example for the use of conditioning paradigms in infant research.
- Expanded discussion of Piaget's sensorimotor substages.
- Expanded discussion of the object concept, including new information on the a-not-b error.
- New section on imitation, including information on visible imitation, invisible imitation, deferred imitation, and preferences in imitation.
- New section on symbolic development, pictorial competence, and understanding of scale.
- New section on perceptual processing abilities.
- Expanded and updated information and research on information processing as a predictor of intelligence, on the development of categorization in infancy, and on the development of the understanding of causality.
- Expanded and updated discussion of violation-of-expectations research methodology.
- Expanded and updated information and research on the development of an understanding of number in infants.
- Expanded and updated information and research on the development of neural structures and their link to memory processes.

- Expanded discussion of the social constructionist approach and how it applies to early childhood education.
- Expanded discussion of the development of infant understanding of phonemic native language patterns.
- Updated research on the use of gestures in infants.
- Expanded information on language milestones in infancy and on syntactic development.
- New section on sign language development in deaf children.
- Expanded discussion of characteristics of early speech and language errors.
- Expanded discussion of and updated research on the role of social interaction in language development and on child-directed speech.

Chapter 7 Psychosocial Development, 0 to 3

- Expanded definition of emotion.
- Expanded discussion of and updated research on developmental changes in crying and in smiling and laughter in infancy.
- Expanded discussion of and updated research on the development of altruism and empathy, including new information on underlying brain neurology.
- Expanded information on the link between collaborative activities and the development of culture.
- Expanded discussion and updated research on stability of temperament, with particular attention on developmental changes in relative influence of genes and environment and cultural influences on stability.
- Expanded discussion of and updated research on behavioral inhibition.
- Expanded description of behaviors of resistantly attached infants.
- Expanded discussion on how attachment is established.
- Expanded discussion of and updated research on long-term effects of attachment.
- New information on physiological and neurological correlates of parental attachment history.
- Expanded discussion of mutual regulation, with the addition of new material on interactional synchrony and the role of oxytocin.
- Expanded discussion of and updated research on social referencing.
- Expanded description on the origins of the self-concept.
- Added information on cultural variations in the development of the self.
- Expanded discussion on the development of conscience, including new information on receptive cooperation.
- Expanded discussion and updated research on factors in the success of socialization.
- Expanded discussion and updated research on sex and gender differences in infants and toddlers.
- Expanded discussion on sibling influences.
- New information included on peer preferences.

Chapter 8 Physical Development and Health in Early Childhood

- Updated information on brain changes from 3 to 6 years of age.
- Expanded discussion and updated research on sleep disturbances.
- Expanded discussion and updated research and statistics on night terrors, sleepwalking, sleeptalking, and nightmares.
- Expanded discussion and updated research on the relationship between motor development, sports participation, and risk of overweight or obesity.
- Expanded discussion and updated research on the origins of handedness.
- Expanded discussion and updated research and statistics on obesity, including both global U.S. data on prevalence, causes, and recommended prevention strategies.
- Updated *Perspectives on Diversity* feature with current global data on prevalence and causes of mortality in the first 5 years of life.
- Updated discussion and research on undernutrition.
- Updated statistics for allergy prevalence in U.S. children.
- Expanded discussion and updated research and recommendations on the use of fluoride for the prevention of dental caries, including a critical analysis of research on fluoride toxicity.
- Updated global and U.S. statistics on accidental child injuries and deaths.
- Updated statistics and information on access to medical care for children living in poverty.
- Updated statistics on the influence of race and ethnicity on children's access to health care.
- Updated statistics on the prevalence and causes of homelessness in U.S. children.
- Updated statistics on the children's exposure to environmental contaminants.

Chapter 9 Cognitive Development in Early Childhood

- Expanded discussion and updated research on the understanding of causality in children.
- Expanded description of the development of the concept of identity in children.
- Expanded description of and updated research on animism.
- New information on long-term academic correlates of early number sense in children.

- Expanded description of irreversibility.
- New information on children's early understanding of mental states.
- Expanded description of and updated research on false beliefs, including links to other skills, neural correlates, and its relationship to lying.
- New section on distinguishing between appearance and reality.
- Added information on understanding fantastical elements in storybooks and the influence religious beliefs play.
- Updated information on the benefits of imaginative activities.
- Expanded discussion of and updated research on family influences, cultural influences, and neurological correlates of theory of mind development.
- New example of encoding.
- Expanded description of working memory, including information on the phonological loop, visuospatial sketchpad, and neurological correlation.
- Expanded discussion of and updated research on the development of executive control, its relationship to academic performance, and intervention programs for its improvement.
- New section on influences on memory retention.
- Updated research on the Flynn effect.
- Expanded discussion of and updated research on family influences on measured intelligence.
- New section on electronic media and cognitive processes.
- Expanded discussion of scaffolding and updated research illustrating its use in the classroom.
- Expanded discussion of fast mapping with the inclusion of updated research and an illustrative example.
- New section on private speech.
- Updated research on the development of literacy, including the impact of electronic devices.
- Updated research on the impact of compensatory preschool programs on child outcomes.
- Updated information on current funding status of universal preschool programs.
- Updated statistics on kindergarten attendance in the United States.
- Updated discussion of and research on kindergarten readiness and outcomes.

Chapter 10 Psychosocial Development in Early Childhood

- Updated research on cultural differences in self-definition.
- Expanded description of developmental changes in self-esteem from ages 5 to 7.
- Expanded discussion of and updated research on contingent self-esteem.
- New information on the differential influence of generic versus targeted praise on task perseverance.
- Coverage of understanding and regulating emotions separated into two distinct sections, expanded, and updated with current research.
- New information on cultural differences in the likelihood of feeling guilt, pride, and shame.
- Expanded discussion of and updated research on gender differences in children and on biological influences on gender development.
- New information on the development of transgender individuals.
- Expanded discussion of the consequences of differing reproductive strategies of men and women.
- Expanded discussion of the interaction between evolutionary and cultural processes in the determination of human behavior and psychology.
- Expanded discussion on Kohlberg's cognitive-developmental theory of gender and on gender schema theory.
- Updated research on family, peer, and cultural influences on gender socialization.
- Expanded discussion of and updated research on nonsocial play, with new information on reticent play.
- Expanded discussion of and updated research on the influence of gender on play styles.
- Expanded discussion of and updated research on cultural influences on play.
- New section on the adaptive functions of play.
- New information on negative outcomes associated with harsh parenting practices.
- Expanded discussion of and updated research on outcomes associated with the use of corporal punishment.
- New information on the use of and recommendations regarding corporal punishment in the U.S. educational system.
- Updated *Perspectives on Diversity* feature, with new information on U.S. and global prevalence in use of corporal punishment.
- Expanded cultural critique of Baumrind's parenting typology.
- Expanded discussion of and updated research on gender differences in aggression.
- New information on cultural influences on aggressive behavior.
- New section on fearfulness.

Chapter 11 Physical Development and Health in Middle Childhood

- Updated weight and height statistics for middle childhood in the United States, with new information on racial and ethnic variations.

- Updated and expanded statistics and discussion on the prevalence of and treatments for dental caries.
- Expanded discussion of and updated research on brain development in middle childhood.
- Expanded discussion of and updated research on nutritional needs and challenges in middle childhood, including new information on racial and ethnic differences in food consumption.
- Expanded discussion of and updated research on sleep statistics, needs, and problems in middle childhood.
- Updated statistics on activity levels in U.S. children.
- Expanded discussion of and updated research on the impact of recess.
- Updated statistics on participation in organized sports programs.
- Updated global and U.S. statistics for overweight and obesity in middle childhood.
- Updated research on the causes of obesity.
- Updated and expanded discussion on outcomes of childhood overweight and on the prevention and treatment of overweight.
- Expanded discussion of and updated research and statistics on childhood asthma, hypertension, and diabetes.
- Expanded discussion of and updated research on stuttering, including new information on neurological correlates.
- Updated statistics on accidental injuries.
- Updated research on childhood predictors of future antisocial behavior.
- Updated statistics on the prevalence of childhood depression.
- New information on the reasons for the rise of off-label drugs for the treatment of psychiatric conditions in children.

Chapter 12 Cognitive Development in Middle Childhood

- New section on developmental changes in the understanding of cause and effect.
- Expanded discussion of and updated research on seriation, transitive inferences, and class inclusion.
- Expanded discussion of and updated research on deductive reasoning.
- Expanded discussion of conservation.
- Expanded discussion on the development of an understanding of number and mathematics, including new information on number estimation and cultural context.
- New section on neurological development, culture, and schooling.
- Expanded discussion of and updated research on developmental influences on executive function.
- Expanded discussion of selective attention.
- Expanded discussion of and updated research on working memory and on metamemory.
- New section on mnemonics.
- New information on the Otis-Lennon School Ability Test (OLSAT8).
- Updated research critiquing the meaning of IQ tests.
- Expanded discussion and critique of Gardner's theory of multiple intelligences.
- Expanded description of Sternberg's Triarchic Abilities Test, including new information on tacit knowledge.
- New section on other directions in intelligence testing.
- Expanded discussion of and updated research on the relationship between genes and brain development.
- Updated research and discussion on the influence of race and ethnicity on IQ.
- New section on the influence of schooling in IQ.
- Expanded discussion of the development of literacy, including new information on the role of metacognitive processes and technology on emerging literacy.
- Updated research on gender differences in academic performance.
- Expanded discussion of and updated research on parental and peer influence on academic performance and on the influence of socioeconomic status on academic achievement.
- Updated information on educational reform efforts in the United States.
- Expanded discussion of and updated research on the impact of class size.
- Updated research on charter schools and homeschooling outcomes.
- Expanded discussion of and updated research on computer and Internet usage in schools.
- Updated statistics and information on second-language learning.
- Updated statistics on special education services and intellectual disabilities in school-age children in the United States.
- Updated statistics and information on attention deficit/hyperactivity disorder, including diagnosis rates by race/ethnicity.
- Expanded description of and updated statistics for giftedness.
- Updated research on the causes and correlated of giftedness and creativity.

Chapter 13 Psychosocial Development in Middle Childhood

- Expanded discussion of and updated research on emotional growth in middle childhood.

- Expanded discussion of and updated research on coregulation, including new information on cultural differences.
- Updated statistics and research on maternal employment, child care arrangements, and related outcomes.
- Updated statistics on U.S. child and family poverty rates.
- Updated research on outcomes related to child poverty.
- Updated statistics on family structure in the United States, with new information on the effect of father involvement on child outcomes.
- Updated statistics on U.S. divorce rates.
- Updated research on child outcomes associated with divorce and family conflict.
- Expanded discussion of and updated research on custody, visitation, and co-parenting.
- Updated research on long-term effects of divorce on children.
- Updated statistics and research on single-parent families, stepfamilies, and gay and lesbian families.
- Updated statistics, research, and discussion on cohabitating families.
- Expanded discussion of and updated research on adoption and outcomes of U.S. and foreign-born children.
- Expanded discussion of and updated research on sibling relationships, including new information on the influence of gender.
- New *Perspectives on Diversity* feature on bullying across the world.
- Expanded discussion of and updated research on peer relations, including new information on discrimination and the influence of group norms.
- Expanded discussion of and updated research on gender influences on peer groups.
- Expanded description of sociometric methodology.
- Expanded discussion of and updated research on correlates and outcomes of popularity, including new information on family and cultural influences.
- Expanded discussion of and updated research on friendship.
- Updated research on aggression and bullying.
- New section on aggression and social information processing.
- Expanded discussion of and updated research on the influence of media and electronics on aggression.
- Expanded discussion of and updated research on bullies and victims, including new information on cyberbullying.

Chapter 14 Physical Development and Health in Adolescence

- Updated and expanded statistics on timing of puberty by race/ethnicity.
- Expanded discussion and updated statistics on menarche.
- Expanded discussion of and updated research on influences on pubertal timing, with new information on the role of leptin and environmental toxins.
- Expanded discussion of and updated research on implications of early and late maturation.
- Expanded discussion of and updated research on brain development in adolescence and its consequences.
- New information on adolescent global health statistics.
- Updated statistics on physical activity in adolescence.
- Expanded discussion of and updated research on sleep needs and problems, with new information on racial and ethnic differences in sleep patterns and on negative outcomes associated with sleep deprivation.
- New section on prevalence of overweight and obesity, including both global and U.S. data.
- New section on causes and consequences of overweight and obesity.
- Expanded discussion of and updated research on body image and eating disorders, with new information on racial and ethnic differences in prevalence rates, global variations in prevalence rates, and peer influences.
- New information on binge eating disorder.
- Updated research on treatment outcomes for eating disorders.
- Updated statistics on adolescent trends in drug use and on drug and alcohol treatment rates.
- Updated and expanded statistics on global and U.S. trends in adolescent alcohol use.
- New information on the effect of alcohol on the developing brain.
- Updated statistics on marijuana usage, including new information about the effect of legalization on usage.
- Updated and expanded statistics on the use of tobacco products in adolescence.
- New section on the initiation of nicotine and alcohol use.
- Updated research on depression.
- New global statistics on death in adolescence and updated statistics for the United States.
- Updated statistics on deaths from motor accidents, with new information on the impact of distracted driving.
- Expanded discussion on and updated research for firearm-related deaths.
- Updated research and statistics on suicide.

Chapter 15 Cognitive Development in Adolescence

- New critique of Elkind's model of adolescent thought.
- Added information on the sequence in which various cognitive skills come on line.
- Revision of critique of Kohlberg's theory of moral development.

- Expanded discussion of and updated research on prosocial behavior and volunteer activity, with new information on cultural and peer influences.
- Expanded and updated statistics on U.S. students' academic achievement and graduation rates.
- Updated research on student motivation and self-efficacy.
- Updated research on adolescent brain differences between girls and boys.
- Updated statistics on doctoral degrees awarded by gender in the United States.
- Expanded discussion and updated research and statistics on the influence of technology on academic skills, including new information on the impact of multitasking on cognition.
- Updated research on the influence of parenting practices and peers on academics.
- Updated statistics on high school status dropout rate.
- Expanded discussion of and updated research on consequences of dropping out of high school.
- Updated research and discussion of the impact of gender on career goals.
- Added information on reasons some students select not to go to college.
- Expanded discussion of and updated research on the impact of working during high school on academics.

Chapter 16 Psychosocial Development in Adolescence

- Updated research on and expanded discussion and critique of Gilligan's theory of identity development in women.
- Expanded discussion of and updated research on ethnic factors in identity development, with new information on the impact of perceived discrimination and cultural socialization.
- New self-report data on same-sex experiences and sexual orientation in adolescence.
- Expanded discussion of and updated research on the origins of sexual orientation, including new material on the 2D:4D ratio.
- Expanded discussion of and updated research on homosexual and bisexual identity development, including new information on the process of coming out.
- Updated statistics on U.S. adolescent sexual behavior.
- Expanded discussion of and updated research on sexual risk taking, including new information on the influence of religiosity.
- Expanded discussion of and updated research on sexting.
- Updated statistics and research on the use of contraceptives.
- Expanded discussion of and updated research on sex education, including the addition of new information on the impact of media influences.
- Added information on global prevalence rates for sexually transmitted infections and updated statistics on U.S. rates.
- Expanded discussion of and updated research on human papilloma virus, including new information on vaccine effectiveness and fears of adverse side effects.
- Updated statistics for chlamydia, gonorrhea, and genital herpes, and updated statistics and expanded discussion for trichomoniasis.
- New information on hepatitis B.
- Updated statistics and research on human immunodeficiency virus (HIV).
- Added information on global adolescent pregnancy statistics, and updated research for the United States.
- New sections on outcomes of teen pregnancy and on preventing teen pregnancy.
- Expanded discussion of and updated research on individuation, with new information on cultural differences.
- Expanded discussion and critique of the influence of parenting styles.
- Expanded discussion of and updated research on parenting monitoring and self-disclosure, with new information on cultural variations.
- Expanded discussion of and updated research on the influence of family structure and atmosphere, with new information on gay and lesbian parents.
- Expanded discussion of and updated research on the impact of maternal employment.
- Expanded discussion of and updated research on adolescents and siblings.
- Updated research on the importance of friends.
- Updated statistics, discussion, and research on the social consequences of electronic communication.
- Updated research and discussion on romantic relationships, including new information on the impact of technology and electronic media.
- Updated research and statistics on dating violence.
- Expanded discussion of and updated research on biological influences on antisocial behaviors, including new information on physiological and neurological correlates.
- Updated research and discussion on family influences on antisocial behavior.
- Expanded discussion of and updated research on environmental influences on antisocial behavior.
- New section on long-term prospects for adolescents with antisocial behavior.
- Expanded discussion of and updated research on preventing and treating teen delinquency.
- Expanded discussion of cultural changes in the United States leading to the new developmental stage of emerging adulthood.

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From Gabi Martorell: Thank you to my family, for encouraging and supporting me while picking up the slack that allowed me to fit in writing around our already crazy lives.

Chapter

1 Introduction to Child Development

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What's to Come

- The Study of Child Development
- Influences on Development
- Issues in Development
- Theories of Child Development
- Research Methods

In 1877, a young father sat gazing at his newborn son and, pen in hand, took careful notes on his child's behaviors. "During the first seven days various reflex actions, namely sneezing, hiccupping, yawning, stretching, and of course sucking and screaming, were well performed by my infant," the proud new father wrote. "On the seventh day, I touched the naked sole of his foot with a bit of paper, and he jerked it away, curling at the same time his toes, like a much older child when tickled. The perfection of these reflex movements shows that the extreme imperfection of the voluntary ones is not due to the state of the muscles or of the coordinating centres, but to that of the seat of the will."

The young Charles Darwin who theorized about his son's motor capacities was one of the first members of the field of child development. Although modern-day researchers are more likely to use electrodes to view the pattern of brain activation in a baby, show them computerized scenarios of imaginary events, or analyze microexpressions on a videotape, they share with Darwin an interest in the changes that emerge in childhood with extraordinary speed and organization. In this chapter, we outline the basics of the field of child development. We discuss how development is conceptualized, some major influences on development, and recurrent issues in the field. Last, we address the major theoretical perspectives and touch on how scientific data are collected.

The Study of Child Development

Development begins at the moment of conception, and it does not cease until death. From the moment of conception, a single cell divides, and divides again, over and over, in an orchestrated, organized fashion. Although each child born of this process is a unique individual, development is nonetheless patterned and orderly and follows a blueprint laid out by our evolutionary history. Eventually, a living, breathing, squalling infant is born into our vast world and begins both to be influenced by and to influence the space around him or her. Babies grow, and become children, and then adolescents, and then adults. It is not until the heart ceases beating and the neurons of the brain stop firing that our stories end. This book is about the beginning chapters of that story.

child development The scientific study of processes of change and stability in human children.

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

The field of **child development** focuses on the scientific study of systematic processes of change and stability in human children. Developmental scientists look at ways in which children change from conception through adolescence and at characteristics that remain fairly stable. The study of child development is part of the broader study of human development, which covers the entire human life span from conception to death, and is organized around periods and domains of development.

THE FIELD OF CHILD DEVELOPMENT

While attempts to understand development have a long history, the scientific study of child development is a relatively new field. The first formal efforts to study the development of children involved "baby biographies," such as Charles Darwin's (1877) description of the difference between his infant son's voluntary and reflexive motor responses quoted at the beginning of this chapter. Although he is best known for evolutionary theory, Darwin kept careful records of his son's development, using them as a springboard for the development of his psychological theories. Other parent-scientists, such as philosopher Dietrich Tiedemann (1787) and developmental psychologist Jean Piaget (1954), kept similar diaries.

In the years following the development of baby diaries, scores of researchers followed in Darwin's footsteps, and more than 30 baby diaries were published in scientific journals (Dennis, 1936). While such efforts served a valuable purpose in that they allowed these scholars to develop ideas and introduced the scientific community to the concept of development as a field of inquiry, they had limited value outside of that. For instance, it is difficult to remain objective when describing one's own child, and what is true of one infant may not be true of all infants. Thus, as the field of child development matured, more scientifically rigorous approaches were used.

Contemporary researchers now use a wide variety of techniques to study children. Modern tools include sensitive instruments that measure eye movements, heart rate, blood pressure, muscle tension, and the like, illuminating previously hidden biological influences. Digital technology, including sensitive video recordings and computer-based analyses, allow researchers to scan babies' facial expressions in minute detail, or carefully analyze how caregivers and babies communicate with each other. Brain imaging techniques allow us to investigate the basis of our thought and behaviors at the neural level. All these advances are grounded in the scientific method, the organized body of methods developed by scientists to investigate the world. Much of this chapter will be focused on describing these techniques and how they are implemented in the study of development.

The scientific method, however, is not enough. Research must be grounded in theory. Theories are the lenses through which data are viewed and understood. They tell us what questions to ask, where to look for answers, and how to interpret what we find. Thus, this chapter will also outline the most important theoretical approaches that have shaped our understanding.

PERIODS OF DEVELOPMENT

Division of the life span into periods of development is a **social construction**: a concept or practice that is an invention of a particular culture or society. There is no objectively

definable moment that an infant becomes a toddler, or a child becomes an adolescent, and indeed some age-related concepts may exist in some cultures, but be absent in others. For example, in many preindustrial societies, the concept of adolescence does not exist. What we consider to be adolescence is viewed as part of adult life.

In *Child*, 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, toddlerhood, early childhood, middle childhood, and adolescence (Table 1.1).

DOMAINS OF DEVELOPMENT

Developmental scientists study three broad domains, or areas, of the self—physical, cognitive, and psychosocial—in the different periods of development. **Physical development** includes growth of the body and brain, sensory capacities, motor skills, and health. **Cognitive development** includes learning, attention, memory, language, thinking, reasoning, and creativity. **Psychosocial development** includes emotions, personality, and social relationships. How and what behaviors are studied may reflect a researcher's stand on basic issues in the field.

For the sake of simplicity, *Child* is organized so each domain is addressed separately within the periods of child development defined earlier. However, child development is a complex and tangled spiderweb of multiple influences, and understanding these influences requires looking at them from multiple perspectives. Just as a fly caught on one thread of a web sends reverberations across the entire structure, development in one area sends ripples though all other areas. For example, a child with frequent ear infections may develop language more slowly than a child without this physical problem, and the failure to develop language may lead to feelings of frustration because of the difficulty in communicating with others. Thus, scholars of child development draw collaboratively from a wide range of disciplines, including psychology, psychiatry, sociology, anthropology, biology, genetics, education, history, and medicine.

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WHAT DO YOU DO?

Early Childhood Education Teacher

Early childhood education teachers support children's early development in the classroom, focusing on infancy and toddlerhood. These teachers plan classrooms that encourage exploration and learning, lead developmentally appropriate activities, and guide their students. Early childhood education teachers may work in private or public schools. Often only an associate's degree is required to work in private settings, though lead teachers typically have at least a bachelor's degree. In public schools, early childhood education teachers must meet the licensure requirements to teach preschool through third grade of the particular state, which generally include a bachelor's degree, practicum or internship, and passage of state exams. To learn more about what an early childhood teacher does, visit www.naeyc.org.

Child includes findings from research in all these fields. Throughout the text, links between the three major domains of development will be highlighted.

Influences on Development

"I feel sure, from what I have seen with my own infants, that the period of development of the several faculties will be found to differ considerably in different infants," wrote Darwin. He was referring to what are now known as **individual differences**—that is, differences among children in characteristics, influences, or developmental outcomes. Children differ in a range of areas, from gender to body build to energy level to personality. Heredity, environment, maturation, the contexts of their lives, and normative and nonnormative influences can impact how they develop. The timing of these variables is also a factor in development.

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.

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

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

HEREDITY, ENVIRONMENT, AND MATURATION

Influences on development can be described in two primary ways. Some influences are internal and driven by heredity. Heredity can be conceptualized as the genetic roll of the dice. It consists of the inborn traits and characteristics provided by a child's biological parents. Other influences stem from outside the body, starting with the prenatal environment in the womb and continuing throughout life. The relative influence of nature (heredity and biological processes) and nurture (environmental influences) is fiercely debated, and theorists differ in the weight they assign to each.

Scientists have found ways to measure the contributions of nature and nurture to the development of specific traits within a population. For example, even though heredity strongly affects intelligence, environmental factors such as parental stimulation, education, and peer influences also affect it. Contemporary theorists and researchers are increasingly interested in explaining how nature and nurture work together rather than in arguing about which factor is more important.

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

TABLE 1.1 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 influence. • Physical growth and development of motor skills are rapid.	• Ability to learn and ability to remember are present, even in the early weeks. • Use of symbols and ability to solve problems develop by end of 2nd year. • Comprehension and use of language develop rapidly.	• Attachment to parents and others forms. • Self-awareness develops. • Shift from dependence to autonomy begins. • 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.	• Gender identity develops. • Self-concept and understanding of emotions become more complex; self-esteem is global. • Independence, initiative, and self-control increase. • 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 greater 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.

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unfolding 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 adults, individual differences in innate personal characteristics (heredity) and life experience (environment) play an increasing role as they adapt to the internal and external conditions.

CONTEXTS OF DEVELOPMENT

In Victorian England, fathers were generally remote figures and did not typically take part in child care activities. However, Charles Darwin was different. By all accounts he was a loving and involved father. His daughter described him as "the most delightful play-fellow, and the most perfect sympathizer." Modern-day fathers in the United States show a wider range of involvement; some fathers are completely absent from family life, some are closely involved with caregiving, and some even take on the role of a stay-at-home parent.

For a child, the immediate context normally is the family; the family in turn is subject to the wider and ever-changing influences of neighborhood, community, and society. How might the family experiences of Darwin's children have shaped them? And how would the wider societal norms interact with their immediate family environment?

For many children, the immediate context of development is the family. Since the 1980s, the number of people in the United States living in multigenerational households has steadily increased.

Family

What type of family did you grow up in? If you lived with two parents, you were part of a nuclear 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 most common family unit in the United States and other Western societies. In 1960, 37 percent of households were composed of nuclear families. In 2014, only 16 percent of households could be described as such. The modern family structure is becoming increasingly diverse. We now see families of single or divorced parents, households that may include a stepparent and stepsiblings or a parent's live-in partner, and an increasing number of unmarried parents, gay and lesbian households with children, and mixed race households (Krogstad, 2014).

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

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

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.

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 (Johnson et al., 2003). Today the extended-family household is becoming slightly less typical in some developing countries due to industrialization and migration to urban centers (Kinsella & Phillips, 2005). In the United States, however, economic pressures, housing shortages, and out-of-wedlock childbearing have helped to fuel a trend toward three- and even four-generational family households. In 2014, a record 19 percent of the U.S. population, or 60.6 million people, lived in multigenerational families. This number has been steadily increasing since the low reached in the early 1980s (Cohn & Passel, 2016).

Culture, Ethnicity, and Race

Culture, ethnicity, and race can influence child development. **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 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, computers and telecommunications enhance cultural contact among adults and children alike; e-mail and social networking sites offer almost immediate communication across the globe.

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. Within large societies, ethnic groups

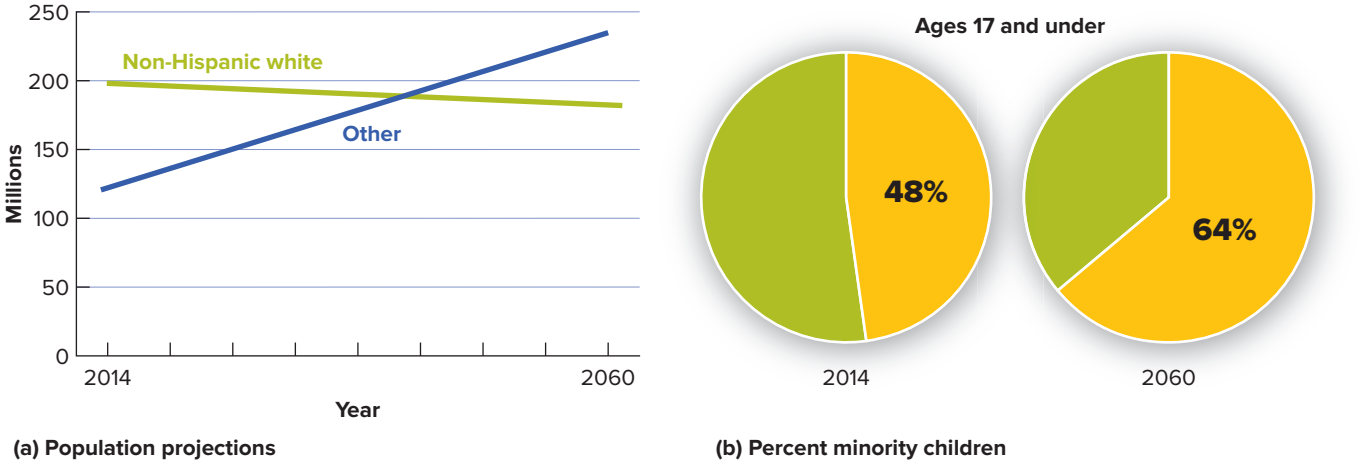

FIGURE 1.1 U.S. Ethnic Minority Population Projections: 2014–2060

(a) According to Census Bureau projections, non-Hispanic whites are expected to remain the largest single racial and ethnic group in the United States, but beginning in about 2044, the group will make up less than 50% of the total U.S. population. In 2060, racial and ethnic minorities as a group are expected to make up 56% of the total population. (b) Also by 2060, "minority" children are expected to make up 64% of the total child population.

Source: S. L. Colby & J. M. Ortman, *Projections of the size and composition of the U.S. population: 2014 to 2060.* P25–1143. Washington, DC: U.S. Census Bureau, 2015.

may also be characterized by minority status. Ethnic minorities are those ethnic groups that have national or cultural traditions different from the majority of the population, and they are often affected by prejudice and discrimination. By 2044, due to rising immigration and high birthrates among immigrant families, ethnic minorities in the United States—roughly one-third of the population in 2008—are expected to become the majority (Colby & Ortman, 2015; Figure 1.1a and 1.1b). Geographic dispersion and adaptation to local conditions together with a steady rise in interracial marriages—in 2015, 1 in 6 new marriages in the United States was between people of different races (Bialik, 2017)—have produced a wide variety of physical and cultural characteristics within populations. According to a 2015 estimate, 2.6 percent of the U.S. population is of two or more races (United States Census Bureau, 2016).

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. In time, however, immigrants tend to learn the language, customs, and attitudes needed to get along in the dominant culture, although many preserve some of their unique cultural practices and values (Johnson et al., 2003). *Perspectives on Diversity* explores characteristics of immigrant families in the United States.

It is worth considering what we mean when we speak of race. All humans belong to the same taxonomic classification—Homo sapiens. However, there are important differences in outward appearance of people from different geographical regions—note, for instance, the different skin color of people from northern European countries and from Africa. These salient differences have led people to speak of individuals as being of different races. However, there is no clear scientific consensus on the definition of race, and it is impossible to measure reliably (Bonham, Warshauer-Baker, & Collins, 2005; Sternberg, Grigorenko, & Kidd, 2005). Human genetic variation occurs along a broad continuum, and 90 percent of such variation occurs *within* rather than *among* socially defined races (Ossorio & Duster, 2005). In other words, the differences between two people on the opposite ends of a distribution within one race are larger than the differences between two people of different races. 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).

It is also worth noting that across broad ethnic and racial dimensions, there is still vast diversity within the categories themselves. For example, the term "Hispanics" encompasses a variety of different types of people: Cuban Americans; Central Americans, including Mexicans; South Americans; and those Hispanics who were born in the United States. Moreover, within these groupings, individuals may be white, black, Native American, or of mixed descent. When a term such as "Hispanics" is used to describe this diverse group as a single entity, this is known as ethnic gloss. Ethnic gloss is an overgeneralization that obscures or blurs variations within heterogenous groups.

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

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 *Child,* we examine many studies that relate SES to developmental processes, such as mothers' verbal interactions with their children, and

Perspectives on Diversity

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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 to Latin America, the Caribbean, Asia, and Africa. In 2009, about 80 percent of foreign-born families were from countries in Latin America and Asia (Greico & Trevalyan, 2010). Nearly one-fourth (24 percent) of U.S. children lived in immigrant families in 2007. The legal status of many immigrant families is uncertain. Approximately 5.1 million children under the age of 18 years—30 percent of children of immigrants and 7 percent of all children—have at least one parent who is unauthorized, although most (79 percent) of the children are themselves U.S. citizens (Capps, Fix & Zong, 2016). Faster growing than any other group of children in the country, children in immigrant families 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. More immigrants come from Mexico (30 percent) than from any other country (www.census.gov). An estimated 5 million Mexican-born children or children of Mexican-born parents live in the United States.

Poverty is higher in children from immigrant families. Fifty-one percent of immigrant children live in poverty, as compared with 40 percent of all children in the United States. Having undocumented parents is an even greater risk; 75 percent of these children live in poverty (Capps et al., 2016). Access to health care is also an issue. While the implementation of the Affordable Care Act (ACA) led to significant gains in health care access for children in immigrant families, their health insurance coverage rates still lag behind those of children with nonimmigrant parents. Immigrant children with noncitizen parents show the lowest rates of all groups (Jarlenski, Baller, Borrero & Bennett, 2016). The future of the ACA is unclear in the Trump administration, as is the effect its repeal might have on children's health insurance coverage (Chaudry & Wimer, 2016).

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

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

to developmental outcomes, such as health and cognitive performance. SES affects these processes and outcomes indirectly through the kinds of homes and neighborhoods people live in and the quality of nutrition, medical care, and schooling available to them.

Poverty is a problem worldwide. Although numbers have fallen by 1.1 billion since 1990, more than 757 million people lived on less than $1.90 a day in 2013. While countries such as China, Indonesia, and India have enjoyed some success in their efforts to eliminate poverty, sub-Saharan Africa lags behind and struggles greatly with this issue (World Bank, 2016). The decline in poverty is in large part due to the expanding global economy (United Nations, 2009). Still, too many children and families remain affected by poverty.

Poverty is also an issue in the United States (Figure 1.2). The number of children living in poor or low-income families increased during the recession of 2008 (Jiang, Ekono & Skinner, 2015). Currently, approximately

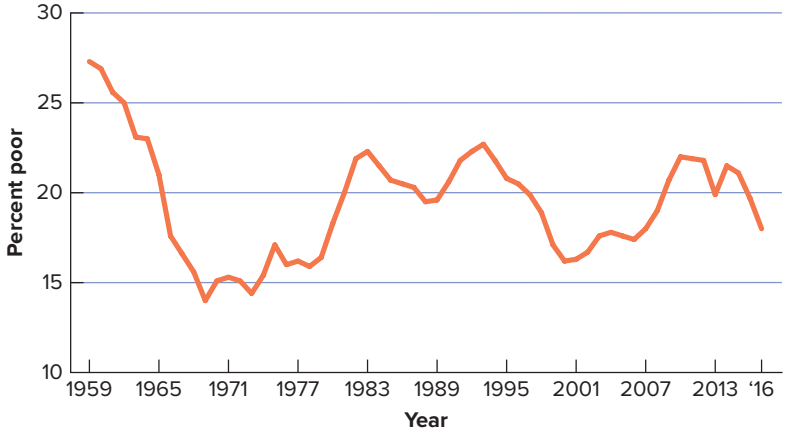


FIGURE 1.2 Child Poverty Rates—United States: 1959–2016

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 began to rise again in 2007. Child poverty is closely tied to the overall health of the economy, rising in periods of recession.

Source: J. L. Semega, K. R. Fontenot, & M. A. Kollar, *U.S. Census Bureau, current population reports, P60–259, income and poverty in the United States: 2016.* Washington, DC: U.S. Government Printing Office, 2017.

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

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

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

20 percent of children under the age of 18 live in poverty, and more than 40 percent of those children live in extreme poverty, defined as living on less than $2 per day per person (Children's Defense Fund, 2017). In total, about 18.5 million people in the United States live in poverty, and children comprise 6 million of those affected (Semega, Fontenot & Kollar, 2017). Although children from middle- and lower-income families are not as negatively affected as those below the poverty line, they nonetheless are at a disadvantage relative to wealthy peers with respect to employment insecurity and income inequality (Foundation for Child Development, 2015). In the United States, race or ethnicity are often associated with socioeconomic status. African American children, Asian and Pacific Islanders, and Hispanic children are more likely to live in poverty than their white counterparts (Kids Count Data Center, 2017).

Poverty is stressful and can damage children and families' physical, cognitive, and psychosocial well-being. Poor children are more likely than other children to go hungry, to have frequent illnesses, to lack access to health care, to experience violence and family conflict, and to show emotional or behavioral problems (Coleman-Jensen, Nord, Andrews & Carlson, 2011; Schickedanz, Dreyer & Halfon, 2015; Eckenrode, Smith, McCarthy & Dineen, 2014; Yoshikawa, Aber & Beardsley, 2012). Their cognitive potential and school performance suffer as well (Wolf, Magnuson & Kimbro, 2017; Hair, Hanson, Wolfe & Pollak, 2015).

The harm poverty does is often indirect through its impact on parents' emotional state and parenting practices and on the home environment they create. Threats to well-being multiply if, as often happens, several **risk factors**, conditions that increase the likelihood of a negative outcome, are present. Moreover, the earlier poverty begins, the longer it lasts, and the higher the concentration of poverty in the community in which children live, the worse the outcomes for those children are (Chaudry & Wimer, 2016).

The composition of a neighborhood affects the way children develop. Living in a neighborhood with large numbers of poor people has been shown to impact physical health, well-being, and school readiness (Chaudry & Wimer, 2016; Cushon, Vu, Janzen & Muhajarine, 2011). Positive development can occur despite serious risk factors, however (Kim-Cohen, Moffitt, Caspi, & Taylor, 2004). For example, parents in poor families report being just as close to their children, they attend church with their families just as often, and they eat meals together as a family more often than wealthier families (Valladares & Moore, 2009). Strong family ties can also buffer children against the negative effects of poverty. Consider television star Oprah Winfrey, singer/songwriter Shania Twain, musician/producer Jay-Z, singer Justin Bieber, and former U.S. President Bill Clinton, all of whom grew up in poverty.

One example of a normative age-graded influence might be the type of music that is popular during adolescence for a particular cohort.

The Historical Context

At one time developmental scientists paid little attention to 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. For example, because of the severe economic recession, record numbers of families moved in with relatives, leading to the largest increase in multigenerational families in modern history (Pew Research Center, 2010). This shift in family structure affects the influences to which children are exposed. Today, as we discuss in the next section, historical context is an important part of the study of child 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 at **nonnormative** influences,

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 do not experience puberty at age 3 or menopause at 12.

Normative history-graded influences are significant events (such as the Hurricane Katrina or the Japan tsunami) 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).

A historical generation is not the same as an age **cohort**, a group of people born at about the same time who experience similar influences. 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.

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.

TIMING OF INFLUENCES: CRITICAL OR SENSITIVE PERIODS

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. This phenomenon is called **imprinting**, and Lorenz believed 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 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 are generally irreversible (Kuhl, Conboy, Padden, Nelson, & Pruitt, 2005).

Do human children experience critical periods as ducklings do? One example of a critical period 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 shock and on its timing. For example, exposure to rubella (measles) when the heart is forming will damage heart structure. However, this type of damage cannot occur after the heart has already been formed. 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 normally (Bushnell & Boudreau, 1993).

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).

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.

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.

critical period Specific time when a given event or its absence has a profound and specific impact on development.

plasticity Modifiability of performance.

sensitive periods Times in development when a given event or its absence usually has a strong effect on development.

Did you know?

The most critical time for a pregnancy is the first trimester when the major structures of the body are forming. Therefore, any adverse substances encountered during this time can profoundly affect the developing fetus. However, many women do not realize at first that they are pregnant. Luckily, nature has provided us with a safety net—the lack of a shared blood supply for approximately two weeks after conception diminishes the likelihood of exposure.

Issues in Development

Psychology is in many ways an outgrowth of philosophy, and just as philosophers ask basic questions about human nature, so do psychologists. Indeed, many of the ancient philosophical debates are echoed in the current controversies in psychology. What drives development? Is nature more important than nurture, or vice versa? Is development active or passive? Continuous or discontinuous? Different explanations, or models, of development have emerged out of debates over these issues.

IS DEVELOPMENT BASED MORE ON NATURE OR NURTURE?

Some influences on development originate primarily with **heredity** (nature), inborn traits or characteristics inherited from a child's biological parents. Other influences come largely from the inner and outer **environment** (nurture), the world outside the self, beginning in the womb, and the learning that comes from experience. Which of these factors—heredity or environment—has more impact on development?

heredity Inborn characteristics inherited from the biological parents.

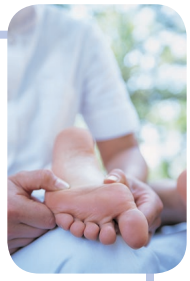
environment Totality of nonhereditary, or experiential, influences on development.

quantitative change Change in number or amount, such as in height, weight, or size of vocabulary.

Most researchers today agree that nature and nurture always work together. For example, while tall parents pass on "tall genes" to their children, and thus tend to have tall children, nutritional status in childhood also will affect eventual height.

Did you know?

Calluses are the result of the environmental experience of repeated friction on skin—they offer protection against irritation. Yet they would never develop if not for genes that instruct the body to "develop a thick layer of skin when this happens." So—are calluses a product of nature or nurture? The answer is that they are both; they would not exist without both influences.



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IS DEVELOPMENT ACTIVE OR PASSIVE?

Some models of development see it as passive. In this view, people are like machines that react to environmental input (Pepper, 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. Fill a car with gas, turn the ignition key, press the accelerator, and the vehicle will move. In this 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. Rather than being active and internally driven, development is reactive and externally driven. Psychologists who endorse this approach see the child as a hungry sponge, eagerly soaking up and responding to the world.

Other models see children as active, growing organisms that set their own development in motion. They do not just react; they initiate events. 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. In this view, children are not merely sponges soaking up experience, they also create experiences for themselves, actively searching for understanding and influencing those around them.

These two models are known as the mechanistic and organismic models of development, and both have a long history of philosophical debate as well as contemporary analogues in modern psychological theories.

The eighteenth century philosopher John Locke was an early proponent of mechanistic models. He believed that babies were born a *tabula rasa*—a blank slate upon which experience would write. Everything that they became and all aspects of their learning and development were shaped by environmental influences, both positive and negative. We see echoes of this approach in Freud's psychoanalytic theory and the behaviorist approaches, both discussed a little later in this chapter.

The French philosopher Jean Jacques Rousseau, by contrast, believed that children were born "noble savages" who would develop according to their own innate plan unless they became corrupted by society. In this view, children were active, growing organisms that were the architects of their own development. Similar beliefs about the active nature of development are also found in Erikson's psychosocial theory, Piaget's theory of cognitive development, and Brofenbrenner's ecological systems theory, also discussed later in this chapter.

IS DEVELOPMENT CONTINUOUS OR DISCONTINUOUS?

Mechanistic and organismic models also differ with respect to what they believe about how change occurs. Mechanistic theorists generally believe in continuous change, while organismic theories most commonly endorse discontinuous change.

Continuous change is gradual and incremental, like walking or crawling up a ramp. (Figure 1.3a). This is a **quantitative change**, a change in number or amount, such as in height, weight, size of vocabulary, or frequency of communication. A baby who can say 3 words at 12 months and then 20 words at 15 months experiences a quantitative change.

Did you know?

A good example of quantitative and qualitative change can be seen with pregnancy. Being 3 months versus 6 months pregnant is a quantitative change. It is not fundamentally different, just further along. But there is no such thing as being a little bit pregnant. You either are, or you are not—making this an example of qualitative change.

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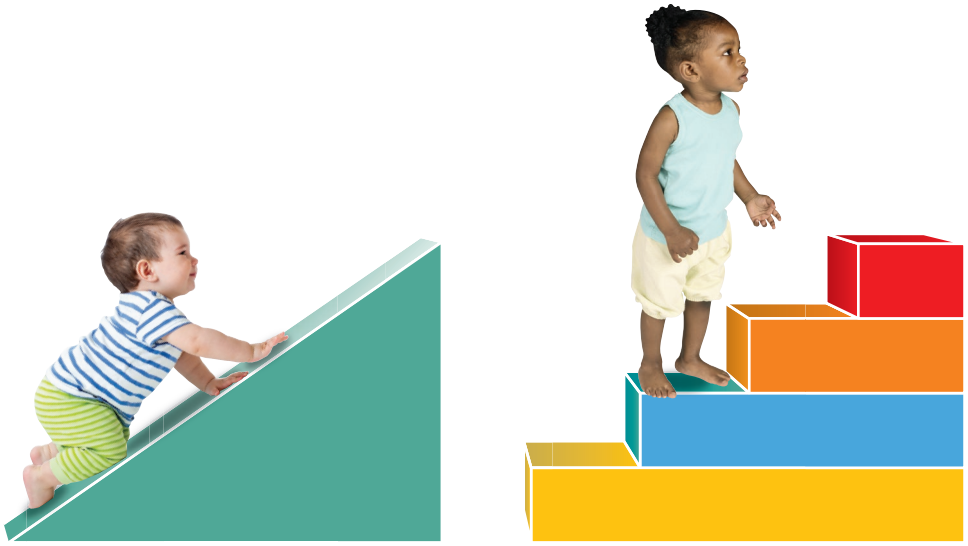

(a) Continuity (b) Stage theory (Discontinuity)

FIGURE 1.3 The Nature of 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.

Discontinuous or **qualitative change** is change in kind, structure, or organization. It is marked by the emergence of new phenomena that cannot be predicted easily on the basis of earlier functioning. The change from a nonverbal child to one who understands words and can communicate verbally is a qualitative change.

These theorists see development as occurring in a series of distinct stages, like stairsteps (Figure 1.3b). At each stage, children cope with different types of problems and develop different abilities. Each stage builds on the previous one and prepares the way for the next.

All stage theories imply qualitative change. Whenever you read or hear about a stage approach to development from Freud or Piaget or Kohlberg, one of the things they are arguing is that development at each stage is fundamentally different from development at other stages.

AN EMERGING CONSENSUS

There are many different viewpoints and controversies in the study of child development. However, as the field has matured, broad agreement has emerged on several fundamental points:

1. *All domains of development are interrelated.* Development in each of the different domains—physical, cognitive, and psychosocial—affects the others in a series of complex interactions. When a baby learns how to stand, this opens up a world of exploration, which then affects cognitive development. Walking triggers the development of attachment-related behaviors; just as soon as a baby is capable of getting away from Mommy, she is suddenly motivated to remain close. While we, of necessity, discuss the different domains independently, in reality, they are constantly interacting with and affecting each other.
2. *Normal development includes a wide range of individual differences.* Each child, from the start, is unlike anyone else in the world. Some are fussy, some calm. Some smile widely at strangers, some hide behind a parent's legs. Some of the influences on individual development are inborn; others come from experience. Most often, these influences work together. These influences also include such factors as family size and composition, neighborhood, socioeconomic status, gender, race, ethnicity, and the presence or absence of physical, behavioral, or emotional disabilities.

   qualitative change Change in kind, structure, or organization, such as the change from nonverbal to verbal communication.
3. *Influences are bidirectional.* Children affect the environment around them as much as the environment shapes them. Outgoing babies smile at strangers, and so their environment includes the presence of friendly adults who interact readily with them. Shy babies shrink away from contact, so their environment may be characterized by the retreat of most adults.
4. *Historical and cultural contexts strongly influence development.* Each child develops within a specific environment bounded by time and place. Some babies are born in times of peace and prosperity, some during war. Some children live in technologically advanced urban environments, others in remote rural areas. These different experiences influence the paths of development.
5. *Early experience is important, but children can be remarkably resilient.* A traumatic incident or a severely deprived childhood may have grave emotional

consequences, but 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.* As long as people live, they have the potential to change in both positive and negative directions. Development is lifelong; from womb to tomb.

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 the following section, we expand upon these foundations and look more closely at influential theories of how development takes place and the methods investigators commonly use to study it.

Theories of Child Development

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 this are informal, or intuitive, theories about why children develop as they do. Fundamentally, these are no different from the theories scientists develop. Like laypeople's informal theories, scientific theories are not dry, abstract, or esoteric. They deal with the substance of real life, and they are an attempt to explain the world around us.

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

A scientific **theory** is a set of logically related concepts or statements that seek 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. Throughout *Child*, different aspects of development are explored through different theories. The major theories used in child development fall under five perspectives: psychoanalytic, learning, cognitive, contextual, and evolutionary/sociobiological (Table 1.2).

Did you know?

In scientific terminology, theories provide stronger evidence than laws. Laws are observations—we know that something happens, but we do not know why. Theories include causal explanations—we know that something happens, and we think we know why.

PERSPECTIVE 1: PSYCHOANALYTIC

While most commonly associated with the work of Sigmund Freud, the term *psychoanalytic perspective* is actually a broader umbrella that incorporates an array of related perspectives, generally focused on the lasting effects of childhood experiences and unconscious drives and motivations. In the following section, we describe the two approaches most relevant to the study of child development—the psychosexual and psychosocial perspectives Sigmund Freud and Erik Erikson popularized.

TABLE 1.2 Five Perspectives on Human Development

Perspective	Important Theories	Basic Propositions
Psychoanalytic	Freud's psychosexual theory Erikson's psychosocial theory	• Behavior is controlled by powerful unconscious urges. • Personality is influenced by society and develops through a series of crises.
Learning	Behaviorism, or traditional learning theory (Paviov, Skinner, Watson)	• People are responders; the environment controls behavior.
	Social learning (social cognitive) theory (Bandura)	• Children learn in a social context by observing and imitating models. • Children are active contributors to learning.
Cognitive	Piaget's cognitive-stage theory	• Qualitative changes in thought occur between infancy and adolescence. • Children are active initiators of development.
	Vygotsky's sociocultural theory	• Social interaction is central to cognitive development.
	Information-processing theory	• Human beings are processors of symbols.
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.
Evolutionary/ Sociobiological	Bowlby's attachment theory	• Human beings have the adaptive mechanisms to survive; critical or sensitive periods are stressed; evolutionary and biological bases for behavior and predisposition toward learning are important.

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WHAT DO YOU DO?

Developmental Psychologist

Developmental psychologists focus on life-span or developmental issues from conception through death, often specializing in a specific stage of the life span. A developmental psychologist might work in a hospital or private practice, or at a home for adolescents or a clinic for the elderly. Developmental psychologists might also research and teach at a university or work for the government or private corporations. For example, a developmental psychologist interested in infants might work for an early intervention program or at a toy company advising on the next developmentally appropriate "must have" toy. Alternatively, a developmental psychologist interested in emerging adulthood might work and teach at a university while also conducting research on college students' risky behaviors. Or a developmental psychologist might research ways to improve seniors' lives, such as increasing the time for a cross-walk signal to accommodate the elderly or implementing an exercise program for seniors. A master's degree or doctoral degree is required to become a developmental psychologist. To learn more about what a developmental psychologist does, visit www.apa.org.

Sigmund Freud: Psychosexual Development

Sigmund Freud (1953, 1964a, 1964b), a Viennese physician, originated the **psychoanalytic perspective**. He believed that unconscious, universal biological drives shaped development. Freud also developed the now well-known concept of the unconscious, a vast psychic reserve unavailable to conscious experience. Here, warring aspects of the personality battled over how biological imperatives could be addressed in real life, with all the rules and social conventions found there.

Freud proposed that personality was composed of three parts: the id, the ego, and the superego. Newborns are governed by the id, which operates under the pleasure 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.

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

"Anatomy is destiny."
Sigmund Freud

Technique Used	Stage-Oriented	Causal Emphasis	Active or Reactive Individual
Clinical observation	Yes	Innate factors modified by experience	Reactive
Clinical observation	Yes	Interaction of innate and experiential factors	Active
Rigorous scientific (experimental) procedures	No	Experience	Reactive
Rigorous scientific (experimental) procedures	No	Experience modified by innate factors	Active and reactive
Flexible interviews; meticulous observation	Yes	Interaction of innate and experiential factors	Active
Cross-cultural research; observation of child interacting with more competent person	No	Experience	Active
Laboratory research; technological monitoring of physiologic responses	No	Interaction of innate and experiential factors	Active
Naturalistic observation and analysis	No	Interaction of innate and experiential factors	Active
Naturalistic and laboratory observation	No	Interaction of innate and experiential factors	Active and reactive (theorists vary)

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WHAT DO YOU DO?

Child Psychologist

Child psychologists work directly with children of all ages to help identify and manage mental and behavioral disorders and to overcome traumatic events. For example, parents might be referred to a child psychologist if their toddler was having developmental delays, or if they were divorcing and wanted to provide additional support for their children. A child psychologist might also conduct research or supervise social workers. Child psychologists typically work out of hospitals, private practices, or schools. Becoming a child psychologist typically requires a doctoral degree, which includes an internship. To learn more about what a child psychologist does, visit www.apa.org.

"Children love and want to be loved and they very much prefer the joy of accomplishment to the triumph of hateful failure." Erik Erikson

Freud proposed that development is shaped by an unvarying sequence of five stages of **psychosexual development** (Table 1.3) in which sensual pleasure shifts from one body zone to another. At each stage, the behavior that is the chief source of gratification (or frustration) changes.

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. In the anal stage of development, occurring during the toddler years, if the mother did not handle toilet training appropriately a child might develop an anal fixation, and as an adult be obsessively clean and overly rigid, or, by contrast, excessively messy and undisciplined. The phallic stage of early childhood, when the zone of gratification presumably shifted to the genital region, is when Freud believed gender identity formed. He believed that children developed a sexual attraction to their opposite sex parent. He did not think this was abnormal or problematic; in fact, he believed it to be part of the typical developmental path children should take. He thought that children's attraction to their opposite sex parent also involved viewing the same-sex parents as a rival, aggressive impulses directed at the same-sex parent, and anxiety over these processes. In an attempt to allay their anxiety, children would identify with their same-sex parents. Freud termed this the Oedipus (for boys) and Electra (for girls) complex and believed it to be vital to the formation of an appropriate gender identity in adulthood. Following this, children would move into the relative calm of the latency stage of middle childhood, where social energies were redirected toward schoolwork, relationships, or hobbies. Finally, as children entered and moved through puberty, sexual urges would reemerge and could now be directed into socially approved channels. In the Victorian times in which Freud lived, this was defined as heterosexual relationships, or marriage, and children.

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.

psychosocial development
In Erikson's eight-stage theory, the socially and culturally influenced process of development of the ego, or self.

Freud's theory made historic contributions and inspired a whole generation of followers, some of whom took psychoanalytic theory in new directions. Many of Freud's ideas, however, now are widely considered obsolete, cannot be scientifically tested, or have not been supported in research. Additionally, his ideas, shaped by the context of Victorian society and developed out of his interactions with his psychologically distressed clients, were culturally bound, relatively negative about human development, and often sexist. Yet several of his central themes have nonetheless stood the test of time. 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 to parents; the role of mental representations of the self and others in establishing 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 (Westen, 1998).

Erik Erikson: Psychosocial Development

Erik Erikson (1902–1994) modified and extended Freudian theory by emphasizing the influence of society on the developing personality. He is notable in that he was one of the first theorists to emphasize the life-span perspective. Like Freud, and like all theorists who endorse stage theories of development, Erikson would argue for qualitative change. What happens at one stage, in theories such as these, is fundamentally different from what happens at other stages. However, unlike Freud, Erikson believed in active development and that people were motivated to resolve the issues that emerged during development.

Erikson's (1950) theory of **psychosocial development** covers eight stages across the life span (see Table 1.3). This was a notable departure from Freud's theories because of the emphasis on lifelong change. While Freud essentially stopped the developmental clock at adolescence, Erikson argued that the entire life span was marked by change and development. Each stage in his approach involved what Erikson originally called a "crisis" in personality—a major psychosocial theme that was particularly important at that time.

TABLE 1.3 Developmental Stages According to Freud, Erikson, and Piaget

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 Child attached to parent of the other sex and later identifies with same-sex parent. Superego develops. Zone of gratification shifts to genital region.	**Initiative versus guilt** *(3 to 6 years).* Child develops initiative when trying 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 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.	**Formal operations** *(11 years through adulthood).* Person can think abstractly, deal with hypothetical situations, and think about possibilities.
	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.	

Note: All ages are approximate.

Each stage requires the balancing of a positive trait and a corresponding negative one. The critical theme of infancy, for example, is basic trust versus basic mistrust. People need to trust the world and the people in it, but they also need to learn some mistrust to protect themselves from danger. Successful resolution of one crisis puts the child in a particularly good position to address the next crisis, a process that occurs iteratively across the life span. So, to extend this example, in toddlerhood the critical theme is autonomy, or a sense of agency and independence. A child who successfully developed a sense of trust would be in a good position to develop this strength. After all, if you feel that others have your back, you are likely to try new things and thus develop new skills. By contrast, if you feel alone and uncertain, you can still develop autonomy, but it is more difficult. Ideally, each stage builds on the preceding one.

Erikson's theory is important for a number of reasons. First, while the crises that Erikson outlined were particular to one place and time—for example, across different cultures, not all children go to school, and not all people marry only in young adulthood—Erikson did make clear that social and cultural influences mattered. Erikson highlighted the social clock, the conventional, culturally preferred timing of important life events. Last, Erikson held a much more positive view of development than Freud. Freud focused more strongly on the ways in which development could go awry. Erikson, while acknowledging that crises could be resolved poorly, left room for improvement. At any point in the life

span, development could shift in a positive direction, and a crisis might be successfully resolved and a new strength developed.

PERSPECTIVE 2: LEARNING

When psychology began to grow in prominence in the scientific community, its methods were not as advanced as they are now. This is true not just with respect to the tools we now employ—the video and computer equipment, the brain-scanning technology, and the measures that have been developed over the decades since then—but also in the means by which research is conducted. Psychology was critiqued, at that time rightly so, for its overly subjective approach to research. The learning perspective, or behaviorism, was in many ways a response to this.

Theorists within the **learning perspectives** argued that development was the result of learning, a relatively long-lasting change in development based on experience or adaptation to the environment. Learning theorists were not interested in the inner working of the mind, because those processes could not be directly observed. Because behavior is observable and countable and confers great objectivity, the focus was on behavior. Terms could be defined precisely, and theories could be tested scientifically in the laboratory, thus, in the opinion of proponents of this view, lending psychology greater legitimacy and respectability.

learning perspective View of human development that holds that changes in behavior result from experience.

classical conditioning Learning based on association of a stimulus that does not ordinarily elicit a particular response with another stimulus that does elicit the response.

Another aspect of learning approaches that was attractive to psychologists at the time was the view of the mind as a tabula rasa, a blank slate upon which experience could write. In this view, everything a person became depended upon experience. Thus, anyone, no matter what race, or whatever individual characteristics might be present, could be anything. This implied that the ills of the world could be fixed if psychologists could just figure the right way to raise children. While the child-rearing strategies proposed by behaviorists eventually fell out of favor, the idea that people were fundamentally the same held a powerful attraction.

Behaviorists also saw development as continuous, emphasizing incremental quantitative changes over time, and reactive, occurring in response to environmental input. The learning approach was the dominant ideology in the field of psychology in the 1950s. Two of the major subtheories were behaviorism and the social learning approach.

Learning Theory 1: Behaviorism

Behaviorism is a mechanistic approach in psychology centered around the observation of behaviors and the belief in the environment's strong influence. Behaviorists hold that human beings at all ages learn about the world by reacting to aspects of their environment that they find pleasing, painful, or threatening, and that these processes govern learning in all areas of development in the same way. In other words, young children learn how to walk and how to talk via the same process—learned associations. Behavioral research focuses on associative learning in which a mental link is formed between two events. Two kinds of associative learning are classical conditioning and operant conditioning.

Classical Conditioning Sometimes, discoveries are serendipitous. This is the case with one of the most influential theories developed in psychology. Ivan Pavlov (1849–1936) was a Russian physiologist studying the role of saliva in dogs' digestive processes. In order to collect saliva from the dogs, Pavlov would secure them with a harness to prevent them from lowering their head, and implant a saliva collection device on their throat. Because dogs salivate readily to meat, he would then place a bowl of meat underneath the dog. While conducting this research, Pavlov realized that the dogs, shortly after being introduced to the methodology, would salivate before the presentation of the meat. Once he realized this was occurring, he investigated this process, using a "bell" (in actuality a metronome that could be configured to release a certain number of clicks per minute) as a predictor for the arrival of the meat. This accidental breakthrough was the foundation for the discovery of **classical conditioning**, a type of learning in which a response (salivation) to a stimulus (a bell) is elicited after repeated association with a stimulus that normally elicits the response (food).

This research was extended by the American behaviorist John B. Watson (1878–1958) who applied stimulus-response theories to children, claiming he could mold any infant in any way he chose. In one of the earliest and most famous demonstrations of classical conditioning in human beings, he taught an 11-month-old baby known as "Little Albert" to fear a furry white rat (Watson & Rayner, 1920).

Classical conditioning is a type of learning first studied in experiments with dogs.

"Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant-chief and, yes, even beggar-man and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors." John Watson

In this study, Albert was exposed to a loud noise when he started to stroke the rat. The noise frightened him, and he began to cry. After repeated pairings of the rat with the loud noise, Albert whimpered with fear when he saw the rat. Moreover, Albert also started showing fear responses to white rabbits and cats, and elderly men's beards. Although the study would be considered highly unethical today, it did demonstrate that a baby could be conditioned to fear something he or she had not been afraid of previously.

Classical conditioning occurs frequently in everyday life. In advertising, a common strategy is to associate a brand with a particular feeling by presenting a product repeatedly with an object that elicits positive feelings. For example, many fast-food restaurants run promotions in which toys are offered to children who eat there. Presumably, this will cause the children to form a positive association with visiting the restaurant, and hence result in loyalty to that brand. This can also work in a negative direction. For example, fear responses to objects such as a car or a dog may be the result of an accident or bad experience.

Operant Conditioning

Angel lies in his crib. When he starts to babble ("ma-ma-ma"), his mother smiles and repeats the syllables. Angel learns his behavior (babbling) can produce a desirable consequence (loving attention from a parent), so he learns to keep babbling to attract his mother's attention. An originally accidental behavior (babbling) has become a conditioned response.

This type of learning is called **operant conditioning**. The individual learns from the consequences of "operating" on the environment. Unlike classical conditioning, operant conditioning involves voluntary behavior, such as Angel's babbling, and the consequences rather than the predictors of behavior. If classical conditioning involves the "before" of actions, operant conditioning is about the "after."

The American psychologist B. F. Skinner (1904–1990), who formulated the principles of operant conditioning, found an organism will tend to repeat a response that has been reinforced by desirable consequences and will suppress a response that has been punished. Thus, **reinforcement** is the process by which a behavior is strengthened, increasing the likelihood the behavior will be repeated. In Angel's case, his mother's attention reinforces his babbling. **Punishment** is the process by which a behavior is weakened, decreasing the likelihood of repetition. If Angel's mother frowned when he babbled, he would be less likely to babble again.

Reinforcement and punishment can be positive, involving "adding" a stimulus to the environment, or "negative," involving the removal of a stimulus to the environment. For example, positive reinforcement is provided by Angel's mother's smiles and encouragement, and because this is reinforcing, it increases the likelihood that Angel will perform this action again. Negative reinforcement (commonly confused with punishment) should likewise result in a greater likelihood of a behavior occurring, but it should do so by removing a negative stimulus. A good example of this can be found in seatbelt alerts in cars. When the ignition key is turned and the seatbelt is not attached, an irritating sound is played. The sound shuts off immediately when the seatbelt is clicked close. The cessation of the sound (the removal of an unpleasant stimulus) is reinforcing (should result in a greater likelihood of the seatbelt being buckled the next time a person drives).

operant conditioning Learning based on association of behavior with its consequences.

reinforcement In operant conditioning, a process that increases the likelihood that a behavior will be repeated.

punishment In operant conditioning, a process that decreases the likelihood that a behavior will be repeated.

The same process can be applied to punishment. An example of positive punishment is speaking sharply to a dog that got into the garbage. Presumably, the negative experience should result in a reduction of the likelihood of the dog misbehaving again. Punishment can also be negative. If two siblings are fighting over what to watch on television, and a parent decides to turn the television off, the children have experienced negative punishment. The removal of a positive stimulus (the television) should result in a reduced likelihood of fighting over the television again.

Reinforcement is most effective when it immediately follows a behavior. If a response is no longer reinforced, it will eventually be extinguished, that is, return to its original (baseline) level. If after a while, no one responds to Angel's babbling, he may babble less often.

Skinnerian psychology has been influential. For many years, the bulk of work in psychology occurred within this approach. Behavioral modification, a form of operant conditioning used to eliminate negative behaviors, has been widely used as a therapeutic approach for children with special needs. It has been extraordinarily effective in managing problem behaviors.

However, as an overarching theory of development, behaviorism falls short. While learning theorists advocated a tabula rasa approach, we know now that children come into the world with a host of individual differences that profoundly impact development. There is no room for such variability within the learning approach. Moreover, it

has become clear that the "rules" for learning in different domains do not always follow behavioral predictions and can differ depending on what is being learned. For example, children learn language far more rapidly than learned associations can account for, and the way in which children learn to talk is fundamentally different from how they learn to walk. Last, psychologists have realized, over time, that while we cannot directly access what is going on in people's heads, we can use indirect measures (such as reaction time) to make objective scientific predictions and collect empirical data. Thus, the earlier reluctance to examine mental processes has abated as the field has progressed.

Learning Theory 2: Social Learning (Social Cognitive) Theory

As the psychological community began to realize that developmental theories that ignored all cognitive processes were incomplete, the original postulates of the behavioral approach were expanded by the American psychologist Albert Bandura (b. 1925). Bandura developed many of the principles of social learning theory in which behaviors are learned by observation. Whereas behaviorists saw the environment as the chief impetus for development, Bandura (1977, 1989) suggested that the impetus for development was bidirectional. He called this concept **reciprocal determinism**—the child acts on the world as the world acts on the child.

reciprocal determinism Bandura's term for bidirectional forces that affect development.

observational learning Learning through watching the behavior of others.

self-efficacy Sense of one's capability to master challenges and achieve goals.

cognitive perspective Perspective that looks at the development of mental processes such as thinking.

organization Piaget's term for the creation of categories or systems of knowledge.

Classic social learning theory maintains that people learn appropriate social behavior chiefly by observing and imitating models—that is, by watching other people and learning both about what potential behaviors might be as well as the likely consequences of such behaviors. This process is called **observational learning**, or modeling. Observational learning can occur even if a person does not imitate the observed behavior. For example, Clara sees her older sister get disciplined for eating a cookie cooling on the counter, and thus restrains herself from doing the same thing.

> *"Coping with the demands of everyday life would be exceedingly trying if one could arrive at solutions to problems only by actually performing possible options and suffering the consequences."*
> *Albert Bandura*

Bandura's (1989) updated version of social learning theory is social cognitive theory. The change of name reflects a greater emphasis on cognitive processes as central to development. Cognitive processes are at work as people observe models, learn "chunks" of behavior, and mentally put the chunks together into complex new behavior patterns. Rita, for example, imitates the toes-out walk of her dance teacher but models her dance steps after those of Carmen, a slightly more advanced student. Even so, Rita develops her own style of dancing by putting her observations together into a new pattern. As children experience success in areas of functioning, they also begin to develop a sense of **self-efficacy**, or confidence in their abilities.

PERSPECTIVE 3: COGNITIVE

Where behaviorists were reluctant to study the inner workings of the mind because they believed that events not directly observable could not be viewed through a scientific lens, cognitive psychologists argued this is exactly what research should illuminate. In the following section, we discuss three theoretical traditions within the **cognitive perspective**: Piaget's cognitive theory, Vygotsky's sociocultural theory, and the information-processing approach to cognition.

Jean Piaget's Cognitive-Stage Theory

The fields of both cognitive psychology and developmental psychology owe an enormous debt to the work of the Swiss theoretician Jean Piaget (1896–1980). Through his careful observations and thoughtful questions, Piaget developed a theory that reintroduced the concept of scientific inquiry into mental states. Because he developed a series of experimental paradigms that yielded hard observational data, he demonstrated that "real" science could indeed investigate hidden mental phenomena, as we will see throughout this text.

Piaget viewed development organismically, as the product of children's attempts to understand and act upon their world. He also believed in qualitative development, and thus his theory delineates a series of stages characterizing development at different ages. Piaget believed that children came equipped with a few basic capacities that allowed them to begin learning. Most importantly, development is initially based on motor activities such as reflexes. By rooting for a nipple, feeling a pebble, or exploring the boundaries of a room, young children first learn how to control and refine their movements, and then learn how to explore their world with their bodies. In this way, they develop a more accurate understanding of their surroundings and greater competence in dealing with them. This cognitive growth occurs through three interrelated processes: organization, adaptation, and equilibration.

Organization is the tendency to create categories, such as birds, by observing the characteristics that individual members of a category, such as sparrows and cardinals, have in common. According to Piaget, people create increasingly

complex cognitive structures called **schemes**, or ways of organizing information about the world. These schemes can be either motor or mental in nature. Take sucking, for example. A newborn infant has a simple scheme for sucking but soon develops varied schemes for how to suck at the breast, a bottle, or a thumb. The infant may have to open her mouth wider, or turn her head to the side, or suck with varying strength.

Adaptation is Piaget's term for how children handle new information in light of what they already know. Adaptation occurs through two complementary processes: (1) **assimilation**, taking in new information and incorporating it into existing cognitive structures, and (2) **accommodation**, adjusting one's cognitive structures to fit the new information.

Equilibration—a constant striving for a stable balance—motivates the shift from assimilation to accommodation. For example, a child knows what birds are and sees a plane for the first time. The child labels the plane a "bird" (assimilation). Over time the child notes differences between planes and birds. For example, the child might notice that planes look different in picture books, even though both fly in the sky, and that birds have feathers, while planes are made of a hard, smooth surface. These observations bring about an uneasy motivational state known as disequilibrium. The child is then motivated to change her understanding to more closely reflect her observations—perhaps by learning the label for plane and realizing that planes and birds are not, after all, the same thing. In other words, accommodation has occurred and she is now at equilibrium. Throughout life, the quest for equilibrium is the driving force behind cognitive growth.

Piaget described cognitive development as occurring in four qualitative stages (listed in Table 1.3 and discussed in detail in later chapters). At each stage a child's mind develops a new way of operating. From infancy through adolescence, mental operations evolve from learning based on simple sensory and motor activity to logical, abstract thought. An implication of this view is that children's minds are not just miniature adult minds. They fundamentally think differently from adults.

According to Piaget, children's development is initially based on motor activities as they learn to explore the world with their bodies.

While Piaget was profoundly influential in the field and provided a series of rough but useful benchmarks of development, he underestimated the abilities of infants and young children. Some contemporary psychologists question his distinct stages, pointing to evidence that cognitive development is more gradual and continuous (Courage & Howe, 2002). Others have pointed out that children's cognitive processes seem closely tied to specific content (what they are thinking about) as well as to the context of a problem and the kinds of information and thought a culture considers important (Case & Okamoto, 1996). We explore further critiques of Piaget's work in the chapters that follow.

"The principal goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done." Jean Piaget

Lev Vygotsky's Sociocultural Theory

The Russian psychologist Lev Semyonovich Vygotsky (1896–1934) focused on the social and cultural processes that guide children's cognitive development. Whereas previous theorists viewed development as a primarily individual process, Vygotsky believed that learning was social and collaborative. Children, said Vygotsky, learn through social interaction and shared activities. Rather than believing in universal aspects of development, Vygotsky believed there are as many ways to develop as there are different cultures and different experiences. While psychology as a field has increasingly incorporated issues of diversity into theory and research, Vygotsky's realization that culture matters was far ahead of his time and remains a fundamental and important contribution of his approach.

schemes Piaget's term for organized patterns of thought and behavior used in particular situations.

adaptation Piaget's term for adjustment to new information about the environment.

assimilation Piaget's term for incorporation of new information into an existing cognitive structure.

accommodation Piaget's term for changes in a cognitive structure to include new information.

equilibration Piaget's term for the tendency to seek a stable balance among cognitive elements; achieved through a balance between assimilation and accommodation.

"Through others, we become ourselves." Lev Vygotsky

zone of proximal development (ZPD) Vygotsky's term for the difference between what a child can do alone and what the child can do with help.

information-processing approach Approach to the study of cognitive development by observing and analyzing the mental processes involved in perceiving and handling information.

According to Vygotsky, adults or more advanced peers must help direct and organize a child's learning. This guidance is most effective in helping children cross the **zone of proximal development (ZPD)**, the imaginary psychological space between what children can do on their own and what they could achieve with another person's assistance. Over time, as a child's abilities increase, responsibility for directing and monitoring learning gradually shifts from the adult to the child—for example, when an adult teaches a child to float, the adult first supports the child in the water and then lets go gradually as the child's body relaxes into a horizontal position. This temporary support that parents, teachers, or others give a child is known as scaffolding.

For example, Noah receives a new puzzle for his birthday, but after emptying the pieces on the dining room table and trying to fit pieces together randomly, he makes little progress. His older sister sees him trying, sits next to him, and offers advice on how to begin. "Try putting all the pieces of the same color in piles," she says, "that makes it easier to see what goes together. You can look at the box for clues. And, if you do the edges first, then you have the outline already done." With his sister's coaching, Noah is able to start assembling the puzzle. His sister has provided him with scaffolding with her coaching and allowed Noah to move to the high end of his zone of proximal development and maximize his learning.

Vygotsky made significant contributions to the understanding of developmental processes. However, one aspect of his approach that initially made it difficult for psychologists to accept his work is that he did not use traditional quantitative experimental methodology. Rather than conducting a carefully controlled experiment, for example, Vygotsky was more likely to conduct experiments such as asking a toddler to draw a representation of an event, or putting two children who spoke different languages in a room and asking them to complete a task together. The data collected often consisted of detailed descriptions of what occurred, and contained little in the way of quantifiable information or statistics (Vygotsky, 1980). Vygotsky simply viewed experiments as different—rather than providing statistical tests of competing hypotheses, they were springboards for the development of understanding.

Despite the reluctance of the scientific community to embrace his experimental approach, Vygotsky's ideas have grown in stature and prominence as their implications for education and cognitive testing have become more apparent. For example, most intelligence tests assess what a child has already learned. By contrast, an intelligence test within the Vygotskian tradition might allow testers to offer hints to children who were having trouble answering a question, thereby focusing on that child's potential learning. Additionally, Vygotsky's ideas have had an enormous impact in early childhood education, and they show great promise for promoting the development of self-regulation, which later affects academic achievement (Barnett et al., 2008).

The Information-Processing Approach

The **information-processing approach** seeks to explain cognitive development by analyzing the processes involved in making sense of incoming information and performing tasks effectively. For example, theorists within this tradition focus on processes such as attention, memory, planning strategies, decision errors, decision making, and goal setting. The information-processing approach is not a single theory but a framework that undergirds a wide range of theories and research. Information-processing theorists view development as continuous. They note age-related increases in the speed, complexity, and efficiency of mental processing, and the variety of material that can be stored in memory. However, they do not consider those processes to be fundamentally different at different ages, just more sophisticated.

The most common model for this theory is that of a computer, which has certain inputs (such as sensory impressions) and certain outputs (such as behaviors). Information-processing theorists are interested in what happens in the middle. How does the brain use sensations and perceptions, say, of an unfamiliar word, to recognize that word again? Why does the same input sometimes result in different outputs? How do people gather, store, retrieve, and use information?

Note that many of the processes that these theorists investigate are internal. It is impossible to directly observe what paying attention to or remembering something looks like. However, it is possible to use indirect measures to infer what is happening inside a person's head. For example, one classic demonstration can be found in the Stroop Effect. When asked to indicate the color of font a word is written in, subjects are faster and more accurate doing so when the color term matches the font color the word is printed in. When they do not match, such as when the word "red" is printed in green font, subjects are slower to say what color the word is printed in. Presumably, the slowed time for the unmatched word and color are the result of interference. Why does this happen? According to Stroop (1935) an experienced reader cannot help but read the word. Because upon reading the word the concept (red) is activated, there is interference with the correct response (green). While this explanation is based on inference, and other scientists might argue about what it means, the result itself is an objective fact that can be tested scientifically.

WHERE DO YOU STAND?

Vygotsky has been credited with drawing attention not to just what a person knows at any one particular time, but on what the person *could* know with help. Do you agree with this perspective? And does this mean that traditional intelligence tests, which assess knowledge already learned, are measuring the wrong thing?

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The information-processing approach has taught us a great deal about the mechanics of how the mind works. It has also demonstrated that we *can* access cognitive processes, even though they are internal.

PERSPECTIVE 4: CONTEXTUAL

According to the **contextual perspective**, development can be understood only in its social context. Contextualists see the individual not as a separate entity interacting with the environment but as an inseparable part of it. Vygotsky's sociocultural theory, which we discussed as part of the cognitive perspective, also can be classified as contextual.

> *"Development, it turns out, occurs through this process of progressively more complex exchange between a child and somebody else—especially somebody who's crazy about that child."*
> *Urie Bronfenbrenner*

The American psychologist Urie Bronfenbrenner's (1917–2005) **bioecological theory** (1979, 1986, 1994; Bronfenbrenner & Morris, 1998) identifies five levels of environmental influence, ranging from very intimate to very broad: microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Figure 1.4).

Bronfenbrenner's model is generally represented as a set of rings. In the middle of the rings is the developing child. Here, individual difference variables such as age, sex, health, abilities, or temperament are present. The child is not seen as just an outcome of development; this is an active viewpoint that views the child as an active shaper of development. But the child does not exist in isolation. To understand development, we must see the child within the context of the multiple environments surrounding her.

The *microsystem* consists of the everyday environment of home, work, school, or neighborhood. It includes face-to-face interactions with siblings, parents, friends, classmates, or later in life, spouses, work colleagues, or employers.

The *mesosystem* is the interlocking influence of microsystems. It may include linkages between home and school (such as a parent-teacher conference) or between the family and the peer group (such as the relationships that develop among families in a neighborhood peer group). Because of mesosystem interactions, environments in which a child does not directly participate may nonetheless influence her. For example, a parent's bad day at work may affect interactions with a child later that evening in a negative way. Despite never having actually gone to the workplace, a child is still affected by it.

The *exosystem* consists of interactions between a microsystem and an outside system or institution. Although the effects are indirect, they can still have a profound impact on a child. For example, countries differ with respect to policies on what type, if any, of maternal and paternal leave are available to new parents. Whether or not a parent has the option to stay home with a newborn is a substantial influence on development. Thus, government policies trickle down and can affect a child's day-to-day experiences.

contextual perspective View of child development that sees the individual as inseparable from the social context.

bioecological theory Bronfenbrenner's approach to understanding processes and contexts of child development that identifies five levels of environmental influence.

The *macrosystem* consists of overarching cultural patterns, such as dominant beliefs, ideologies and economic and political systems. For example, individuals are affected by the type of political system they live in and might reasonably have different experiences if raised in an open democratic society versus an authoritarian regime with limited freedoms.

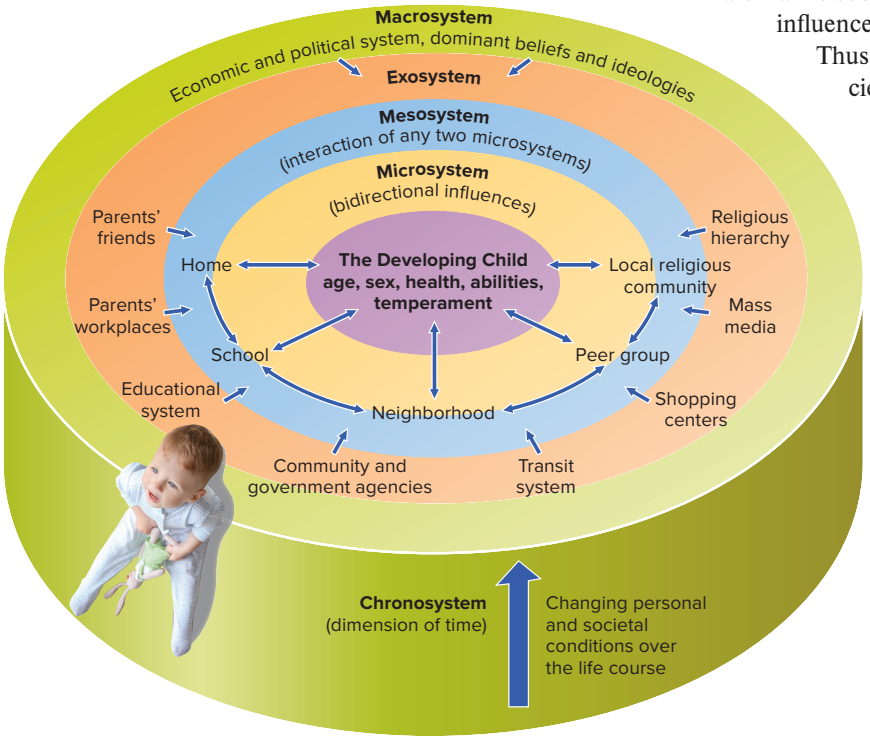


FIGURE 1.4 Bronfenbrenner's Bioecological Theory

Concentric circles show five levels of environmental influence on the individual, from the most intimate environment (the microsystem) to the broadest (the chronosytem)—all within the perpendicular dimension of time.

Last, the *chronosystem* represents the dimension of time. Time marches on and changes occur. These can include changes in family composition (as when a new child is born or a divorce occurs), place of residence, or parents' employment, as well as larger events such as wars, ideological shifts, or economic cycles.

By looking at systems that affect individuals in and beyond the family, this bioecological approach helps us to see the variety of influences on development. The contextual perspective also reminds us that findings about child development in one culture or one group within a culture (such as white, middle-class Americans) may not apply equally to children in other societies or cultural groups.

PERSPECTIVE 5: EVOLUTIONARY/ SOCIOBIOLOGICAL

The **evolutionary/sociobiological perspective** originally proposed by E. O. Wilson (1975) focuses on evolutionary and biological bases of behavior. Influenced by Darwin's theory of evolution, it draws on findings of anthropology, ecology, genetics, ethology, and evolutionary psychology to explain the adaptive, or survival, value of behavior for an individual or species.

Darwin's theory of natural selection is one of the most important theoretical advances of modern science. It is elegant in its simplicity and profound in its implications. Although it was controversial when Darwin first proposed it, and remains controversial today, it is the cornerstone of the biological sciences and has many implications for human psychology.

evolutionary/sociobiological perspective View of human development that focuses on evolutionary and biological bases of social behavior.

ethology Study of distinctive adaptive behaviors of species of animals that have evolved to increase survival of the species.

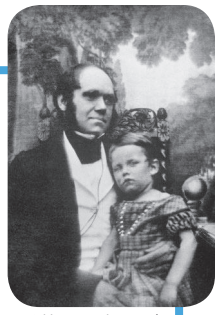
evolutionary psychology Application of Darwinian principles of natural selection and survival of the fittest to human psychology.

Fundamentally, Darwin's theory can be broken down into a few major postulates. First, organisms vary. Second, there are never enough resources for all organisms to survive. Third, individual differences in organisms are heritable. The logical consequence of these simple statements is that some organisms, because of their particular characteristics, will survive and hence reproduce at higher rates than others. Their particular traits, then, will be passed on to their descendants in higher proportions, while characteristics of organisms that are not as well suited to the environment will not. Over vast spans of time, these small incremental changes in passed-down traits result in species change. This process is known as natural selection.

Natural selection is defined as the differential survival and reproduction of different variants of members of a species, and is the tool the natural world uses to shape evolutionary processes. While it is commonly described as "survival of the fittest" the key feature is in actuality reproductive success. Individuals with more adaptive traits pass on more of those traits to future generations. In this way, "fit" characteristics are selected to be passed on, and others die out.

Note that these traits can be physical (like a tiger's stripes, which allow it to blend into the background), behavioral (like the mating dances of many species of birds), or psychological (like a baby monkey's need to cling to and cuddle a warm soft body).

Did you know?



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Charles Darwin was by all accounts a loving and involved father. He encouraged his children to participate in his research, collecting butterflies and plants in the countryside of his family home in Kent, England, and allowing them to draw and doodle on the backs of his scientific manuscripts. He also installed a wooden slide on the stairs and a rope swing on the second floor. At his home, now a museum, you can still see the same slide his children played on so long ago.

> *"In the distant future I see open fields for more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation."*
> *Charles Darwin*

Ethology is the study of animal species' distinctive adaptive behaviors. Ethologists suggest that for each species certain innate behaviors, such as squirrels burying nuts in the fall and spiders spinning webs, have evolved to increase the odds of survival. By observing animals, usually in their natural surroundings and often comparing across different species, ethologists seek to identify which behaviors are universal and which are specific to a particular species or are modified by culture.

Evolutionary psychology applies Darwinian principles to the study of human behavior. Just as we have opposable thumbs evolved for manual dexterity, a heart evolved to pump blood, and lungs evolved to exchange gases, we also have parts of our brains that evolved to address specific adaptive problems.

The psychological products of natural selection in humans are known as cognitive adaptations. For example,

WHERE DO YOU STAND?

Evolutionary psychology is one of the most controversial perspectives in the field of psychology. Do you think evolution can explain animal behavior? Can it explain human psychology? Is there a qualitative difference between the two?

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our brains have evolved to find certain faces and body types as attractive, to strive for dominance, and to perceive babies as cute, because these propensities addressed the adaptive problems of mate selection, access to resources, and survival of young.

Humans have a large number of cognitive adaptations. Most cognitive adaptations are tailored to a specific problem. For example, "morning sickness," the nausea experienced by many women early in their pregnancies, has been theorized to have evolved to protect the fetus from teratogens (harmful substances) during the first trimester of pregnancy when it is most vulnerable. In support of this, the types of foods women generally report aversions to are foods high in teratogens and morning sickness generally subsides after the first trimester (Flaxman & Sherman, 2008). Other adaptations, such as human intelligence, are viewed as having evolved to help people face a wide variety of problems flexibly (MacDonald, 1998). These types of cognitive adaptations, in our ancestral past, led to greater survival and reproduction.

Some cognitive adaptations may survive even if they no longer serve a useful purpose or are even harmful. This is because, relatively speaking, little time has passed since we first left the savannas and our hunter/gatherer lifestyle. Our cultural evolution has outpaced biological evolution. So, for example, our taste buds evolved in an environment where sugar and salt were rare treats and difficult to come by. When they were encountered, it was a good idea to consume as much as possible. Thus, humans evolved a taste preference for salty, fatty foods that in today's world, with its wealth of options, can result in unhealthy eating choices.

Evolutionary psychology, despite arguing that reproductive success is the key feature driving our adaptations, does not propose that people are consciously seeking to maximize their reproductive output. For example, people enjoy sexual activity even when it is not intended to lead to pregnancy. In the ancestral past where birth control was not available, sexual activity often led to pregnancy and hence greater reproductive success. Those people who had a greater desire for sex, and hence more sex, were likely to be more reproductively successful than those with less sexual desire. Thus, genes that code for sexual desire became more common. However, they are not necessarily related to a conscious desire for children. Rather, people tend to have sex because it feels good, just as natural selection designed it to feel.

Early critiques of evolutionary psychology argued that evolutionary approaches reduced human behavior to the dictates of genetic imperatives. However, despite arguing that ultimately the transmission of genes is what drives evolved behaviors, evolutionary psychology is not deterministic. Evolutionary psychologists place great weight on the environment to which humans adapt and the flexibility of the human mind.

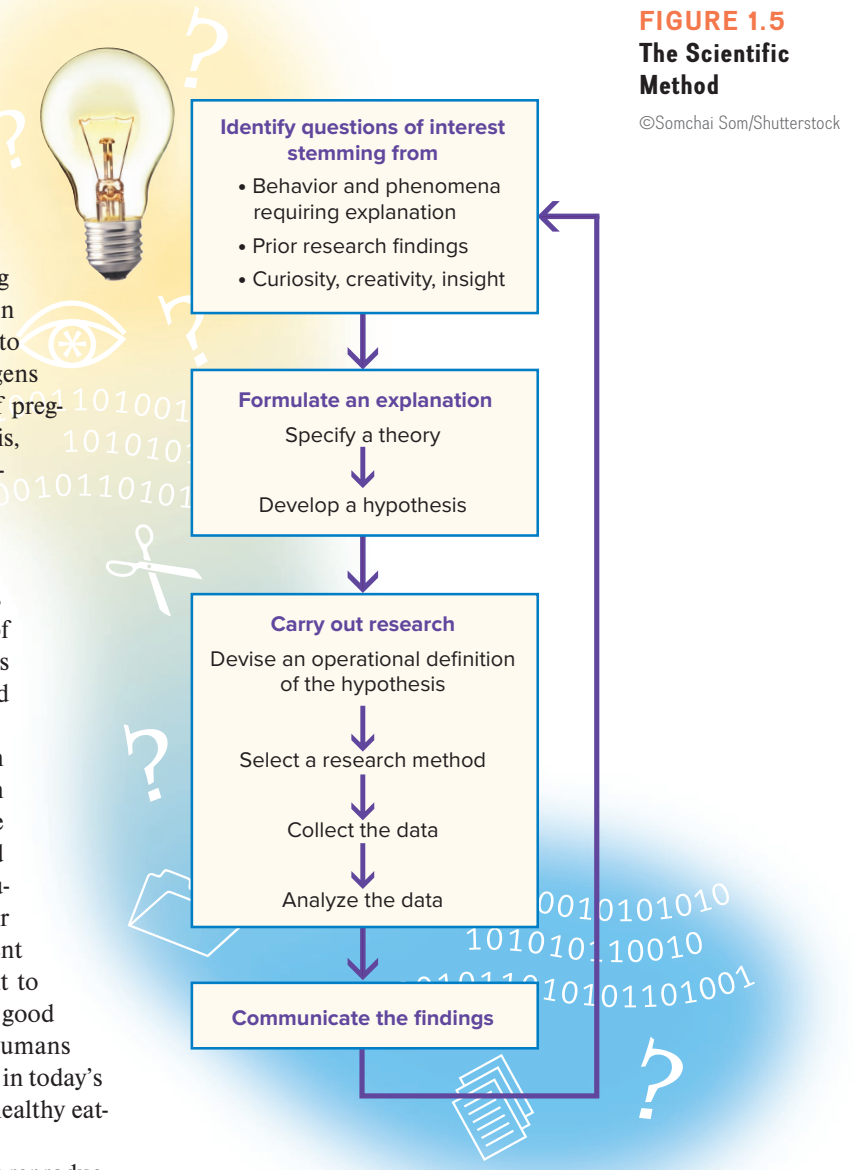

FIGURE 1.5
The Scientific Method

Research Methods

Theories help frame our thinking—they tell us what is important, where to look for it, and how to study it. Theories generate **hypotheses**, or educated guesses, that further research can test. 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. This process is known as the scientific method (Figure 1.5). In the following section, we review some of the major ways in which researchers collect such data and design their experiments.

QUANTITATIVE AND QUALITATIVE RESEARCH

Generally, when most people think of scientific research, they are thinking of what is called *quantitative research*.

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

Quantitative research deals with objectively measurable, numerical data that can answer questions such as "how much?" or "how many?" and that is amenable to statistical analysis. For example, quantitative researchers might study the fear and anxiety children feel before surgery by asking them to answer questions, using a numerical scale, about how fearful or anxious they are. These data could then be compared to data for children not facing surgery to determine whether a statistically significant difference exists between the two groups.

Quantitative research on human development is based on the *scientific method*, which has traditionally characterized most scientific inquiry. Its usual steps are:

1. *Identification of a problem* to be studied, often on the basis of a theory or of previous research.
2. *Formulation of hypotheses* to be tested by research.
3. *Collection of data.*
4. *Statistical analysis of the data* to determine whether they support the hypothesis.
5. *Formation of tentative conclusions.*
6. *Dissemination of findings* so other observers can check, learn from, analyze, repeat, and build on the results.

naturalistic observation
Research method in which behavior is studied in natural settings without intervention or manipulation.

laboratory observation
Research method in which all participants are observed under the same controlled conditions.

Qualitative research, in contrast, focuses on the how and why of behavior. It more commonly involves nonnumerical (verbal or pictorial) descriptions of participants' subjective understanding, feelings, or beliefs about their experiences. Qualitative researchers might study the same subject areas as quantitative researchers, but their perspective informs both how they collect data and how they interpret it. For example, if qualitative researchers were to study children's emotional state prior to surgery, they might do so with unstructured interviews or by asking children to draw their perceptions of the upcoming event. Whereas the goal in quantitative research is to generate hypotheses from previous research and empirically test them, the goal in qualitative research is to understand the "story" of the event.

The selection of quantitative or qualitative methods may depend on the purpose of the study, how much is already known about the topic, and the researcher's theoretical orientation. Quantitative research often is done in controlled laboratory settings; qualitative research typically is conducted in everyday settings, such as the home or school.

FORMS OF DATA COLLECTION

The two forms of data collection development researchers most frequently use are self-reports (including diaries, visual techniques, interviews, and questionnaires) and naturalistic and laboratory observation.

Self-Reports

Self-report involves asking people for information. One form of self-report is a *diary* or log. Adolescents may be asked, for example, to record what they eat each day or the times when they feel depressed. In studying young children, *parental self-reports*—diaries, journals, interviews, or questionnaires—are commonly used, often together with other methods, such as videotaping or recording.

In a face-to-face or telephone *interview,* researchers ask questions about attitudes, opinions, or behavior. In a *structured interview*, each participant is asked the same set of questions. An *open-ended interview* is more flexible; the interviewer can vary the topics and order of questions and can ask follow-up questions based on the responses. To reach more people and to protect their privacy, researchers sometimes distribute a printed or online *questionnaire,* which participants fill out.

Self-report measures are meaningful and useful only if they are both valid (that is, the tests measure the abilities they claim to measure) and reliable (that is, the results are reasonably consistent from one time to another). In addition, any characteristics to be measured must be carefully operationalized—that is, defined solely in terms of the operations or procedures used to produce or measure a phenomenon.

By questioning a large number of people, investigators can get a broad picture—at least of what the respondents *say* they believe or do or did. However, people willing to participate in interviews or fill out questionnaires may not accurately represent the population as a whole. Furthermore, heavy reliance on self-reports may be unwise because people may not have thought about what they feel and think or honestly may not know. They may forget when and how events took place or may consciously or unconsciously distort their replies to fit what is considered socially desirable.

Naturalistic and Laboratory Observation

Observation can take two forms: naturalistic observation and laboratory observation. In **naturalistic observation**, researchers look at children in real-life settings. In **laboratory observation**, researchers observe and record behavior in a controlled situation. These are nonexperimental methods—researchers do not attempt to manipulate variables.

Both kinds of observation can provide valuable descriptions of behavior, but they have limitations. For one, they do not explain *why* people behave as they do, though the observers may suggest interpretations. They merely explain what people are doing. Additionally, an observer's presence can alter behavior. When people know they are being watched, they may act differently. Finally, there is a risk of *observer bias:* the researcher's tendency to interpret data to fit expectations or to emphasize some aspects and minimize others.

BASIC RESEARCH DESIGNS

Research designs most frequently used by development researchers include case studies, ethnographic studies, correlational studies, and experiments. Case studies and ethnographic studies are qualitative in nature, while correlational and experimental studies use quantitative methodology.

In naturalistic observation, a researcher might collect data by observing real-world events such as a teacher interacting with schoolchildren.

Case Studies

A **case study** is a study of a single case or individual. Case studies may include careful observation and interpretation, or they may use behavioral or physiological measures and biographical, autobiographical, or documentary materials.

Case studies are particularly useful when studying something relatively rare, when it simply is not possible to find a large enough group of people with the characteristic in question to conduct a traditional laboratory study. Case studies can explore sources of behavior and can test treatments, and they suggest directions for further research. However, case studies do have shortcomings. While an intensive examination of a single individual can yield rich data, we cannot be sure that what is learned applies to all children. Thus, case studies have limited generalizability.

Ethnographic Studies

An **ethnographic study** is a case study of a culture. An ethnography seeks to describe the pattern of relationships, customs, beliefs, technology, arts, and traditions that make up a society's way of life. It uses a combination of methods, including informal, unstructured interviewing and participant observation. **Participant observation** is a form of naturalistic observation in which researchers live or participate in the societies or smaller groups they observe, as anthropologists often do for long periods of time. Because of ethnographers' close involvement with a culture, findings are especially open to observer bias. However, ethnographic studies can provide valuable information about cultural processes and help reduce cultural bias in theory and research.

Correlational Studies

A **correlational study** is an attempt to find a correlation, or statistical association, between two or more variables. Correlations are expressed in terms of direction (positive or negative) and magnitude (how strong they are). Two positively related variables increase or decrease together. For example, the more texting someone engages in while driving, the more likely the person is to get into a car crash. Two variables have a negative, or inverse, correlation if, as one increases, the other decreases. Studies show a negative correlation between the amount of time students spend on Facebook and the grades students receive. The more time students are on Facebook, the lower their grades are (Kirschner, 2010).

Correlations are reported as numbers ranging from +1.0 (a perfect positive relationship) to −1.0 (a perfect negative relationship). The closer a correlation comes to +1.0 or −1.0, the stronger the relationship, either positive or negative. A correlation of 0 means the variables have no relationship (Figure 1.6).

Although strong correlations suggest possible cause-and-effect relationships, these are merely hypotheses and need to be examined and tested critically. Correlation does not equal causation. It is possible that the causation goes the other way or that a third variable explains the relationship. For example, a strong positive correlation exists between the number of churches in a town and the number of liquor bottles found in the garbage cans of that town. One might theorize that heavy drinkers seek out religion, or alternatively, that religion drives people to drink. But a third variable, in this case population size, is the true causal influence. Larger towns have more churches, more garbage cans, and more liquor bottles in those cans. Churchgoing and drinking are associated with each other, but not in a causal way.

case study A study of a single subject, such as an individual or family.

ethnographic study In-depth study of a culture, which uses a variety of methods including participant observation.

participant observation Research method in which the observer lives with the people or participates in the activity being observed.

correlational study Research design intended to discover whether a statistical relationship between variables exists.

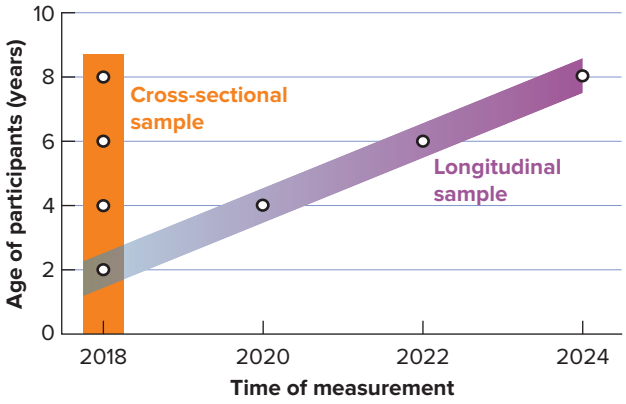

FIGURE 1.6 Developmental Research Designs

In the cross-sectional study, groups of 2-, 4-, 6-, and 8-year-olds were tested in 2018 to obtain data about age differences. In the longitudinal study, a group of children were first measured in 2018, when they were 2 years old; follow-up testing is done when the children are 4, 6, and 8 to measure age-related changes in performance.

WHERE DO YOU STAND?

Insurance companies use correlations—such as the one found between texting and accident risk—to calculate their premiums. Is this fair?

Experiments

While correlational studies are a valuable tool, their inability to establish causal relationships limits their use. Thus, psychologists often use experimental design. The only way to show with certainty that one variable causes another is through experimentation.

Groups and Variables An experiment is a controlled procedure that allows stronger causal statements to be made. A common way to conduct an experiment is to randomly divide the participants into two kinds of groups. An **experimental group** consists of people who are to be exposed to the experimental manipulation or treatment—the phenomenon the researcher wants to study. A **control group** consists of people who are similar to the experimental group but do not receive the treatment or may receive a different treatment. You can think of them as the "status quo"—what would happen if the variable of interest were not there.

experimental group In an experiment, the group receiving the treatment under study.

control group In an experiment, a comparison group of people similar to those in the experimental group who do not receive the treatment under study.

independent variable In an experiment, the variable or condition the researcher directly manipulates to see if it has an effect on another variable.

dependent variable In an experiment, the condition that may or may not change as a result of changes in the independent variable.

For example, in one recent study, researchers were interested in whether or not bribing children to eat their vegetables is an effective strategy. In their study, roughly 400 4- to 6-year-olds were divided into two experimental and one control group. One group was bribed with a sticker to eat their least favorite vegetable, one group was bribed with verbal praise, and the remainder were given no reward for eating their vegetables. The results? After two weeks, the sticker group liked their vegetables as much (or little!) as the control group, however, they were more likely to eat more vegetables later even in the absence of bribery. The researchers concluded that bribery resulted in increased consumption of vegetables (Cooke et al., 2011).

In this experiment, the type of reward (sticker, verbal praise, or no reward) was the independent variable, and how many vegetables they ate at the conclusion of the study was the dependent variable. An **independent variable** is something the researcher directly manipulates to see if it has an effect on another variable. A **dependent variable** is the end measure that tells researchers whether their hypotheses were supported.

When conducting research, it is important to define exactly what is to be measured in a way that other researchers can replicate, or reproduce. For this purpose, researchers use an *operational definition*—a definition stated solely in terms of the operations used to measure a phenomenon. In the Cooke et al. (2011) study cited above, children's vegetable consumption was measured by weighing the vegetables before and after the children were given an opportunity to eat them. Had the researchers merely stated the children ate "more" vegetables, it would have been unclear exactly what this meant. Did the child need to consume the entire vegetable for it to count? Or was each bite counted? By specifying the variable precisely as grams of consumption, other researchers know exactly what was done, and can reproduce the study and comment on the results.

Random Assignment If an experiment finds a significant difference in the performance of the experimental and control groups, how do we know that the cause was the independent variable? For example, in the Cooke et al. (2011) study, what if the researchers had recruited one group of parents from a bulletin board posting at a fast-food restaurant and another group from a posting at a health food store? One might reasonably assume there might be preexisting differences between such groups. If all parents from the health food store were placed in the experimental group, the researchers might have found an effect, but it would be unclear why. We could not be sure that the incentives were the reason the children in those groups ate more vegetables; rather it might be because those children were already accustomed to eating vegetables and were more open to bribery. The best way to control for effects of such extraneous factors is *random assignment:* assigning the participants to groups in such a way that each person has an equal chance of being placed in any group.

If assignment is random and the sample is large enough, differences between groups should be evenly distributed so that the groups initially are as alike as possible in every respect except for the variable to be tested. Otherwise, unintended differences between the groups might *confound,* or contaminate, the results, and any conclusions drawn from the experiment would have to be viewed with suspicion.

Of course, with respect to some variables we might want to study, such as age, gender, and race/ethnicity, random assignment is not possible. We cannot assign Terry to be 5 years old and Brett to be 10, or one to be a boy and the other a girl. When studying such a variable, researchers can strengthen the validity of their conclusions by randomly selecting participants and by trying to make sure that they are statistically equivalent in other ways that might make a difference in the study.

Laboratory, Field, and Natural Experiments In a *laboratory experiment* the participants are brought to a laboratory, where they experience conditions the experimenter manipulates. This allows researchers to establish cause-and-effect relationships and permits replication. The tight control of a laboratory study allows researchers to be more certain that their independent variable caused change in their dependent variable. However, because of the artificiality of the laboratory experience, the results may not generalize to real life. People may not act as they typically would.