Chapter Preview

Developmental psychologists study the life cycle, from conception to death, examining how we develop physically, cognitively, and socially. Three issues pervade this study: (1) the relative impact of genes and experience on behavior, (2) whether development is best described as gradual and continuous or as a sequence of predetermined stages, and (3) whether the individual’s personality remains stable or changes over the life span.

The life cycle begins when one sperm unites with a mature egg to form a zygote. Attached to the uterine wall, the developing embryo begins to form body organs and by 9 weeks, the fetus becomes recognizably human. With the aid of new methods of studying babies, researchers have discovered that newborns are surprisingly competent. Infants develop skills of sitting, standing, and walking in a predictable sequence; their actual timing is a function of individual maturation rate.

Jean Piaget theorized that the mind develops by forming schemas that help us assimilate our experiences and that must occasionally be altered to accommodate new information. In this way, children progress from the simplicity of the sensorimotor stage through the increasingly complex preoperational and concrete operational stages to abstract formal operational thought. Lev Vygotsky emphasized the role of the social environment in the child’s development.

Infants become attached to their parents largely because they are comfortable, familiar, and responsive. Denied such care, children may become withdrawn, anxious, and eventually abusive. Children who develop a positive self-image tend to have been reared by parents who are authoritative but at the same time allow their children a sense of control over their own lives.

Adolescence typically begins at puberty with the onset of rapid growth and sexual maturity. Jean Piaget theorized that adolescents develop the capacity to reason abstractly. Following Piaget’s lead, Lawrence Kohlberg contended that moral thinking likewise proceeds through stages, from a morality of self-interest to a morality of universal ethical principles. Jonathan Haidt, on the other hand, believes that much of our morality is rooted in moral intuitions. Erik Erikson theorized that a chief task of adolescence is to form one’s identity. This struggle may continue into the adult years as new relationships emerge and new roles are assumed. The time from 18 to the mid-twenties is an increasingly not-yet-settled phase of life called emerging adulthood.

Researchers who emphasize experience and learning tend to see development as a slow continuous process. Those who emphasize biological maturation tend to see development as a series of genetically predisposed stages. Although the stage theories of Piaget, Kohlberg, and Erikson have been modified in the light of later research, each theory usefully alerts us to differences among people of different ages and helps us to keep the life-span perspective in view.
The barely perceptible physical declines of early adulthood begin to accelerate during middle adulthood. For women, a significant change is menopause. After 65, declining perceptual acuity, strength, and stamina are evident, but short-term ailments are fewer.

Research suggests that people are not as predictable as some stage theorists have argued. Life events and even chance occurrences influence adult life in unanticipated ways. Two basic aspects of our lives—love and work—dominate adulthood. Most people retain a sense of well-being throughout life.

The normal range of reactions to a loved one’s death, or to our own impending death, is wider than most suppose. Those who face death with a sense of integrity, according to Erikson, feel that their lives have been meaningful and worthwhile.

Researchers who have followed lives through time have found evidence for both stability and change.

Chapter Guide

Introductory Exercise: Fact or Falsehood?

Developmental Psychology’s Major Issues

- Exercises: Introducing Central Issues in Developmental Psychology (p. 234); Life-Span Development (p. 236); Personal Stability and Change (p. 267)
- Exercises/Projects: Generating Lifelines (p. 235); What Is the Ideal Age? (p. 236)
- Projects: Your Lot in Life (p. 234); Newspaper Advice Column Letters as Case Studies in Developmental Psychology (p. 235); Writing Letters to Parent and Child (p. 235); Essay Exchange (p. 236)
- Lecture: Resilient Youth (p. 267)
- Video: The Developing Child; Transitions Throughout the Life Span
- Worth Video Anthology: 100-Years-Old and Counting: Psychological and Biological Factors; Nature Versus Nurture: Growing Up Apart; The Nature-Nurture Issue

4-1. Identify three issues that have engaged developmental psychologists.

Developmental psychologists study physical, cognitive, and social changes throughout the life span. Three issues pervade this study: (1) the relative impact of genes and experience on development, (2) whether development is best described as gradual and continuous or as a sequence of separate stages, and (3) whether personality traits remain stable or change over the life span.

Researchers who emphasize experience and learning tend to see development as a slow continuous process. Those who emphasize biological maturation tend to see development as a series of genetically predisposed stages. Although the stage theories of Piaget, Kohlberg, and Erikson have been modified in the light of later research, each theory usefully alerts us to differences among people of different ages and helps us to keep the life-span perspective in view.

Research suggests that lifelong development includes stability and change. The early years of life provide a poor predictor of a person’s eventual traits; older children and adolescents also change. As people grow older, however, personality does stabilize. There is also an underlying consistency to most people’s temperaments.

Prenatal Development and the Newborn

- Lecture: Prenatal Sensory Development (p. 238)
- PsychSim 5: Conception to Birth (p. 238)
- Lecture Break/Student Project: Conception Issues (p. 237)
- Video: Life’s Greatest Miracle (p. 238)
- Worth Video Anthology: Prenatal Animation; Prenatal Development; Prenatal Brain Development: From Conception to Birth
4-2. Discuss the course of prenatal development, and explain how teratogens affect that development.

A total of 200 million or more sperm deposited during intercourse approach an egg 85,000 times their own size. The few that make it to the egg release digestive enzymes that eat away the egg’s protective coating, allowing a sperm to penetrate. The egg’s surface blocks out all others and within a half day, the egg nucleus and the sperm nucleus fuse.

Fewer than half of all fertilized eggs, called zygotes, survive. In the first week, cell division produces a zygote of some 100 identical cells. Then the cells begin to differentiate, that is, to specialize in structure and function. About 10 days after conception, the zygote’s outer cells become the placenta and attach to the mother’s uterine wall. The inner cells become the embryo.

By 9 weeks after conception, the embryo looks unmistakably human and is now a fetus. During the sixth month, internal organs such as the stomach have become sufficiently formed and functional to allow a prematurely born fetus a chance of survival. At each prenatal stage, genetic and environmental factors affect development. The placenta transfers nutrients and oxygen from mother to fetus. Along with nutrients, teratogens ingested by the mother can reach the developing child and place it at risk. If the mother drinks heavily, the effects may be visible as fetal alcohol syndrome (FAS).

4-3. Describe some abilities of the newborn, noting how researchers explore their mental abilities.

Newborns are surprisingly competent. They are born with sensory equipment and reflexes that facilitate their interacting with adults and securing nourishment. Touched on its cheek, a baby opens its mouth and roots for a nipple. Finding one, they automatically close on it and begin sucking, which requires tonguing, swallowing, and breathing. Newborns turn their heads in the direction of human voices and gaze longer at a drawing of a face-like image. They prefer to look at objects 8 to 12 inches away, the approximate distance between a nursing infant’s eyes and the mother’s. Within days of birth, the newborn distinguishes its mother’s odor and prefers its mother’s voice.

Researchers exploit habituation, a decrease in responding with repeated stimulation, to assess what infants see and remember.

Infancy and Childhood

4-4. Describe some developmental changes in brain and motor abilities during infancy and childhood.

Maturation, the biological growth processes that enable orderly changes in behavior, sets the basic course of development; experience adjusts it. Maturation accounts for commonalities, such as standing before walking. Within the brain, nerve cells form before birth. After birth, the neural networks that enable us to walk, talk, and remember have a wild growth spurt. From ages 3 to 6, growth occurs most rapidly in the frontal lobes, which enable rational planning. The association areas linked with thinking, memory, and language are the last cortical areas to develop. The neural pathways supporting language and agility proliferate into puberty, when a pruning process takes place.

Nature and nurture together sculpt our synapses. During early childhood—while excess connections are still on call—youngsters can most easily master such skills as the grammar and accent of another language. We seem to have a critical period for some skills.

As the infant’s muscles and nervous system mature, ever more complicated skills emerge. The sequence is universal; the timing varies. Babies roll over before they sit unsupported, and they usually creep before they walk. Genes play a major role. Identical twins typically begin sitting up
and walking on nearly the same day. Experience has a limited effect for other physical skills as well, including those that enable bowel and bladder control.

Our earliest memories seldom predate our third birthday. By 4 to 5 years, this *infantile amnesia* is giving way to remembered experiences. Experiments do show, however, that infants can retain learning over time. For example, 3-month-olds who learn to propel a mobile by moving their legs retain the association for at least a month. Studies of older children indicate that sometimes what the conscious mind cannot recall in words from the earliest years, the nervous system and our two-track mind somehow remember.

4-5. Describe how a child’s mind develops from the perspectives of Piaget, Vygotsky, and today’s researchers.

*Cognition* refers to all the mental activities associated with thinking, knowing, remembering, and communicating. Jean Piaget maintained that the mind of the child is not a miniature model of the adult’s. He theorized that the mind tries to make sense of experience by forming *schemas*, concepts or frameworks that organize and interpret information. We *assimilate* new experiences, that is, interpret them in terms of our current understandings. But we also sometimes adjust, or *accommodate*, our current understanding to incorporate new information.

During the *sensorimotor stage* (birth to age 2) of cognitive development, children experience the world through their senses and actions. By about 8 months, an infant exhibits *object permanence*, an awareness that things still exist even when they are out of sight.

Piaget maintained that up to about age 6 or 7, children are in a *preoperational stage*—too young to perform mental operations. They are *egocentric*, that is, they cannot perceive things from another’s point of view and lack a *theory of mind*. (*Autism* is also marked by impaired ability to infer others’ mental states.) Piaget thought that at about age 6 or 7, children become capable of performing *concrete operations*, for example, those required to comprehend the principle of *conservation*. They think logically about concrete events, grasp concrete analogies, and comprehend mathematical transformations. By age 12, reasoning expands from the purely concrete to encompass abstract thinking, which Piaget called *formal operational* thinking.

While Piaget focused on how the child’s mind grows through interaction with the physical environment, Lev Vygotsky emphasized the role of the social environment in the child’s cognitive development. To Vygotsky, the child was a young apprentice, mentored by parents and others who, by giving them new words, provided a temporary *scaffold* from which children can step to higher levels of thinking.

Today’s researchers have shown that young children are more capable and their development more continuous than Piaget believed. The cognitive abilities that emerge at each stage have begun developing at earlier ages. Today’s researchers also see formal logic as a smaller part of cognition than Piaget did. Nonetheless, studies support his idea that human cognition unfolds basically in the sequence he proposed.
4-6. Describe how parent-infant attachment bonds form.

*Stranger anxiety* is the fear of unfamiliar faces that infants commonly display, after about 8 months of age (soon after object permanence emerges). They greet strangers by crying and reaching for their familiar caregivers.

The attachment bond is a survival impulse that keeps infants close to their caregivers. Infants become attached to their parents or primary caregivers not simply because they gratify biological needs (nourishment) but because they provide body contact that is soft and warm. Familiarity provides another key to attachment. In animals, attachments based on familiarity often form during a critical period shortly after birth. This rigid attachment process is called **imprinting**. Although humans do not imprint, they do become attached to what they have known. Clearly, familiarity provides a safety signal.

- Exercise/Project: Measures of Attachment Type (p. 244)
- Worth Video Anthology: Harlow’s Studies on Dependency in Monkeys; Morelli’s Strange Situation Test; Erikson’s Stages of Psychological Development—Trust Versus Mistrust

4-7. Describe how psychologists study attachment differences, and discuss their findings.

When placed in a *strange situation* such as a laboratory playroom, about 60 percent of children display **secure attachment**; they play comfortably in their mother’s presence, are distressed when she leaves, and seek contact when she returns. Other infants, who are **insecurely attached**, are less likely to explore their surroundings, and when their mother leaves, cry loudly and remain upset, or seem indifferent to her going and returning. Sensitive, responsive parents tend to have securely attached children. Insensitive, unresponsive parents have infants who often become insecurely attached. Although genetically influenced **temperament** may elicit responsive parenting, parental sensitivity has been taught and does increase secure attachment to some extent. Children’s anxiety over separation from parents peaks at around 13 months, then gradually declines. Erik Erikson attributed the child’s development of **basic trust**—a sense that the world is predictable and reliable—to sensitive, loving caregivers. Adult relationships tend to reflect the attachment styles of early childhood.

4-8. Describe how childhood neglect or abuse affects children’s attachments.

Infants who experience abuse or extreme neglect often become withdrawn, frightened, even speechless. Young monkeys who are deprived of attachment may, as adults, cower in fright or lash out in aggression when placed with other monkeys their age. In humans, too, the unloved sometimes become the unloving.

Although most children who grow up under adversity are **resilient** and become normal adults, those who suffer severe and prolonged sexual abuse are at increased risk for health problems, psychological disorders, substance abuse, and criminality. Abuse victims are at considerable risk for depression if they carry a gene variation that spurs stress-hormone production.

4-9. Describe the effect of day care on children.

Early research uncovered no negative impact of maternal employment on the child’s development. More recent research has investigated the effects of differing quality of day care on different types and ages of children. Children who have spent the most time in day care seem to have slightly advanced thinking and language skills but also have an increased rate of aggressiveness and defiance. But the child’s temperament, the mother’s sensitivity, and the family’s economic and educational level influenced aggression more than time spent in day care.

- Worth Video Anthology: Today’s Overscheduled Children
- Exercises: Dimensions of Parenting (p. 245); Parental Authority Questionnaire (p. 246); Parenting and Children’s Traits (p. 248)
- Exercises/Critical Thinking Breaks: It Really Is Mom’s Fault! (p. 246); Can You Raise a “Genderless” Child? (p. 249)
4-10. Describe three parenting styles, and explain how children’s traits relate to them.

Authoritarian parents impose rules and expect obedience. Permissive parents submit to their children’s desires, make few demands, and use little punishment. Authoritative parents are both demanding and responsive. Children with the highest self-esteem, self-reliance, and social competence generally have warm, concerned, and authoritative parents. Studies in cultures worldwide reflect the positive correlates of authoritative parenting. However, correlation is not causation. Also, many Asian and African cultures place less value on independence and more on a strong sense of family self—a feeling that what shames the child shames the family, and what brings honor to the family brings honor to the self.

Adolescence

- Exercise: Introducing Adolescent Development (p. 250)
- Projects: Interviewing Adolescents (p. 250), Writing About Puberty (p. 250)
- Lecture: Is 16 Too Young to Drive a Car? (p. 251)
- Worth Video Anthology: Teen Boys: Emerging Sexuality; Teen Girls: Emerging Sexuality; Do Adolescents Lack Empathy?

4-11. Define adolescence, and explain how physical changes affect developing teens.

Adolescence, the transition period from childhood to adulthood, typically begins at puberty with the onset of rapid growth and developing sexual maturity. As in earlier life stages, the sequence of physical changes is more predictable than the timing (for example, breast buds and visible pubic hair appear before menarche, the first menstrual period). Early maturation is good for boys but may be stressful for girls, depending on how people react to their maturity.

Brain development includes a selective pruning of unused neurons and connections. Frontal lobe maturation that improves judgment, impulse control, and the ability to plan for the long term lags behind the emotional limbic system. The pubertal hormonal surge, early development of the emotional limbic system, and later maturation of the frontal lobe help explain teens’ occasional impulsiveness, risky behaviors, and emotional storms.

- Exercises: Formal Operational Thought (p. 251); Kohlberg’s Theory of Moral Development (p. 252)

4-12. Describe adolescent cognitive and moral development, according to Piaget, Kohlberg, and later researchers.

During the early teen years, reasoning is often self-focused. Adolescents may think their private experiences are unique. Gradually, adolescents develop the capacity for what Piaget called formal operations, the capacity to reason abstractly. This includes the ability to test hypotheses and deduce consequences. The new reasoning power is evident in adolescents’ pondering and debating such abstract topics as human nature, good and evil, and truth and justice.

Lawrence Kohlberg contended that moral thinking likewise proceeds through a series of stages, from a preconventional morality of self-interest, to a conventional morality that cares for others and upholds laws and rules, to (in some people) a postconventional morality of agreed-upon rights or basic ethical principles. Kohlberg’s critics argue that the postconventional level is culturally limited, appearing mostly among people who prize individualism. Jonathan Haidt’s moral intuitionist explanation is that moral feelings precede moral reasoning, and so moral judgment involves quick gut feelings. Character education programs teach children to empathize with others and to delay gratification. As thinking matures, behavior also becomes less selfish and more caring.

- Exercises: Erikson’s Stages (p. 253); Objective Measure of Ego-Identity Status (p. 253); Who Am I? (p. 254); The Life Cycle (p. 254); Gender Differences in Smiling (p. 254)
- Project/Exercise: Applying Erikson’s Psychosocial Stages (p. 253)
4-13. Describe the social tasks and challenges of adolescence.

Erik Erikson theorized eight stages of life, each with its own psychosocial task. In infancy (the first year), the issue is trust versus mistrust. In toddlerhood (the second year), the challenge is autonomy versus shame and doubt. Preschoolers (age 3 to 5) learn initiative or guilt, and elementary school children (age 6 to puberty) develop competence or inferiority.

A chief task of adolescence is to solidify one’s sense of self—one’s identity. Adolescents usually try out different “selves” in different situations. Often, this role confusion gets resolved by the gradual reshaping of a self-definition that unifies the various selves into a consistent and comfortable sense of who one is. The part of our self-concept that comes from group memberships is our social identity. In some cases, adolescents may form their identity early, simply by taking on their parents’ values and expectations. Others may adopt an identity defined in conformity with a particular peer group. Erikson believed that forging a clear and comfortable identity is a precondition for establishing close relationships.

For young adults (twenties to early forties), the issue is intimacy, the ability to form emotionally close relationships, versus isolation, and for middle-aged adults (forties to sixties), generativity versus stagnation. The challenge of late adulthood (late sixties and older) is integrity versus despair.

4-14. Contrast parental and peer influences during adolescence.

As adolescents in Western cultures form their own identities, they become increasingly independent of their parents. Nonetheless, researchers have found that most teenagers relate to their parents reasonably well. Positive relations with parents support positive peer relations. Teens are herd animals, and they talk, dress, and act more like their peers than their parents. Although adolescence is a time of increasing peer influence, parents continue to influence teens in shaping their religious faith as well as college and career choices.

4-15. Discuss the characteristics of emerging adulthood.

Clearly, the graduation from adolescence to adulthood is now taking longer. In the United States, the average age at first marriage has increased more than 4 years since 1960. The time from 18 to the mid-twenties is an increasingly not-yet-settled phase of life called emerging adulthood, when many young people attend college or work but continue to live in their parents’ home.

4-16. Identify the physical changes that occur during middle and late adulthood.

Muscular strength, reaction time, sensory keenness, and cardiac output crest in the mid-twenties and then slowly begin to decline. These barely perceptible physical declines of early adulthood begin to accelerate during middle adulthood. For women, a significant physical change of adult
life is menopause. A woman’s attitudes and expectations influence the emotional impact of menopause. Men experience a gradual decline in sperm count, testosterone level, and speed of erection and ejaculation. After middle age, most men and women remain capable of satisfying sexual activity.

In later life, declining visual sharpness, muscle strength, reaction time, stamina, hearing, and smell are evident. Short-term ailments are fewer, but a weakened immune system makes life-threatening ailments more likely. Neural processes slow, and compared with teens and young adults, older people take a bit longer time to react, to solve perceptual puzzles, and even to remember names. Exercising the body feeds the brain and helps compensate for the loss of brain cells. Exercise also helps maintain the telomeres, which protect the ends of chromosomes.

- Lectures: Living to 100 (p. 263)
- Exercises: Selective Optimization With Compensation (p. 262)
- Worth Video Anthology: Old Age: Thinking and Moving at the Same Time

4-17. Assess the impact of aging on memory.

As the years pass, recognition memory remains strong, although recall begins to decline, especially for meaningless information. Older adults may take longer than younger adults to produce the words and things they know. Older people’s capacity to learn and remember skills declines less than their verbal recall. Without reminder cues, time-based tasks (“Remember the 8 A.M. meeting”) and habitual tasks, such as remembering to take medications, can be especially challenging.

**Cross-sectional studies**, in which people of different ages are compared with one another, and **longitudinal studies**, in which the same people are restudied and restested over a long period, have identified mental abilities that do and do not change as we age. Especially in the last three or four years of life, cognitive decline typically accelerates. Researchers call this near-death drop **terminal decline**.

- Lecture: Friendship in Marriage and The Marriage Ref (p. 264)
- Feature Film: Tuesdays With Morrie (p. 265)
- Worth Video Anthology: Healthy Aging: The Power of Positive Thinking

4-18. Discuss the themes and influences that mark the social journey from early adulthood to death.

Some psychologists have suggested that adults progress through an orderly sequence of life stages. They argue, for example, that as people enter their forties, they undergo a midlife transition to middle adulthood, which, for many, is a crisis. However, research has failed to support the idea that distress peaks anywhere in the midlife range. Moreover, critics suspect that, given variations in the social clock and individual experience, any proposed timetable of adult ages and stages will have limited applicability. Marriage, parenthood, retirement, and other life events that make transitions to new life stages are occurring at unpredictable ages. Even chance encounters and events can have lasting significance.

Two basic aspects of our lives dominate adulthood. Erik Erikson called them **intimacy** (forming close relationships) and **generativity** (being productive and supporting future generations). Evolutionary psychologists suggest that marriage had survival value for our ancestors in that parents who stayed together and raised children to a child-bearing age had a greater chance of passing their genes on to posterity. Compared with their counterparts of 50 years ago, people in Western countries are better educated and marrying later. Yet they are nearly twice as likely to divorce. And those who cohabit before marriage have had higher rates of divorce and marital dysfunction than those who did not cohabit. Nonetheless, more than 9 in 10 heterosexual adults marry, and research indicates that married people are generally happier when compared with the unmarried. Often, love bears children. As children begin to absorb more and more time, money, and emotional energy, satisfaction with the marriage may decline. Most parents are happy to see their children grow up, leave home, marry, and have careers.
For adults, a large part of the answer to “Who are you?” is the answer to “What do you do?” Choosing a career path is difficult, especially during bad economic times. It frequently takes time for people to settle into an occupation. Few students in their first two years of college or university can predict their later careers. Happiness is having work that fits your interests and provides a sense of competence and accomplishment.


Worldwide, the over-65 years are not notably unhappy. Positive feelings grow after midlife and negative feelings subside. Older adults increasingly use words that convey positive emotions. Moreover, the bad feelings we associate with negative events fade faster than do the good feelings we associate with positive events. More and more people flourish into later life, thanks to biological, psychological, and social-cultural influences.

- Exercises: The Death-Bed Test (p. 265); Thinking About Death (p. 266); Personal Stability and Change (p. 267)
- Exercise/Project: End-of-Life Care (p. 266)
- Project: Preparing an Obituary (p. 266)
- Lecture: Resilient Youth (p. 267)

4-20. Describe the range of reactions to the death of a loved one.

Usually, the most difficult separation is from one’s spouse. Grief is especially severe when the death of a loved one comes before its expected time on the social clock. The normal range of reactions to a loved one’s death is wider than most people suppose. Some cultures encourage public weeping and wailing; others hide grief. Within any culture, some individuals grieve more intensely and openly. Research discounts the idea that terminally ill and bereaved people go through predictable stages. Life itself can be affirmed even at death, especially if one’s life has been meaningful and worthwhile.
Fact or Falsehood?

1. Teens whose mothers drank when pregnant are at risk for heavy drinking and alcohol dependence.  
2. Newborns gaze longer at a drawing of a face-like image than at a bull’s-eye pattern.  
3. On the day we are born, we have most of the brain cells we will ever have.  
4. Infants initially develop close attachment to their mothers merely because they provide nourishment.  
5. Most abusive parents report having been battered or neglected as children.  
6. High school girls who have the most affectionate relationships with their mothers tend also to enjoy the most intimate friendships with girlfriends.  
7. Compared with 20-year-olds, those over 65 are much less likely to suffer upper respiratory flu each year.  
8. Most mothers are depressed for a time after their children grow up, leave home, and marry.  
9. The risk of depression increases in later life.  
10. The first two years of life provide a good basis for predicting a person’s eventual personality traits.