

Chapter in Review

1. Developmental psychology is the study of change and continuity over the life span. In the past, developmental psychologists have focused primarily on infancy and childhood; however, it is now recognized that development continues throughout all of life. This change in approach is reflected in the lifespan perspective that assumes that development is a lifelong process, is associated with loss as well as gain, is determined by many causes, and is characterized by plasticity.
2. Ordinary fertilization (conception) occurs when one of the hundreds of millions of sperm released by the male during heterosexual intercourse succeeds in piercing the protective covering of the female secondary oocyte. At this point the oocyte divides into two cells, the ovum and the second polar body (a collection of discarded chromosomes). The nuclei of the sperm and ovum fuse, producing a single nucleus known as the zygote. In about 5 days the zygote attaches itself to the lining of the uterus (endometrium). After rapid cell division the zygote enters the embryonic stage. At about 8 to 9 weeks after conception the embryo comes to be known as a fetus.
3. The fetus faces challenges, including exposure to teratogens that may cause congenital disorders such as fetal alcohol syndrome. However, cocaine, including crack, is not as serious a threat to the developing fetus as once thought.
4. Newborn infants have perceptual competencies not previously recognized. They may recognize their mother's face, voice, and scent, as well as distinguish language from other patterns of sound. Brain development in the first months of life is intense and rapid. Many trillions of synapses are formed during the first year, but then go through the process of synaptic pruning. The infant brain is highly plastic, but this plasticity is constrained to some degree by genetic programming, including critical periods.
5. Temperament refers to an infant's initial tendency to respond in relatively consistent ways when it comes to certain general qualities and responses to situations. Mary Rothbart describes three dimensions of temperament: effortful control, negative emotionality, and extraversion. Infant temperament is largely stable at least through toddlerhood, and may persist into adolescence and adulthood. Temperament is strongly influenced by genetic heredity, but it may also be influenced by the unique experiences of each individual prior to birth (prenatal influence) and in early infancy. The unique experiences of each individual that are not shared by other members of the family are known as the nonshared environment.
6. Attachment is the unique intimate bond that develops between an infant and his or her caregivers beginning at about age 6 months. Attachment theory was initially formulated by John Bowlby and Mary Ainsworth as a blend of psychoanalytic and evolutionary theory. Bowlby was strongly influenced by discoveries of Konrad Lorenz regarding critical periods and imprinting. Attachment theorists propose that infants develop internal working models of the world based on their relationships with their primary caregiver. Using the "strange situation" research strategy, Mary Ainsworth characterized infants as developing one of three types of attachment: secure, insecure-ambivalent, or avoidant. Although some theorists

- propose that experiences of day care in early infancy result in insecure attachments, research suggests that the most important influence on attachment style is the infant's home life. However, while high-quality daycare can boost academic achievement scores, more time spent in child is associated with poorer social skills and work habits, and conflict with parents and adults.
7. Infants come into the world prepared to develop certain cognitive competencies. From a very early age infants understand that objects are solid, that they will only move through contact, and that they travel through space in a continuous path. They also appear to understand very basic numerical calculation. Although nativists suggest that infants may come into the world with competencies such as these already intact, empiricists hold that these competencies are primarily developed through experience.
  8. One of the most important and enduring figures in all of psychology is Jean Piaget, the founder of constructivist theory of childhood cognitive development. Although Piaget was mistaken about aspects of this development, a large number of his insights have been supported over the years. Piaget proposed that each child actively "constructs" an understanding of the world based on his or her experience, always pushing to construct an understanding that is more advanced than the one previously held. He believed that these understandings develop in distinct stages through the use of age-specific schemas. Children use assimilation and accommodation to construct increasingly accurate schemas. The developmental stages identified by Piaget are the sensorimotor stage, during which object permanence develops; preoperational stage, characterized by egocentrism (but also, paradoxically, by acquisition of theory of mind) and by lack of conservation; the concrete operations stage, during which the child begins to master tasks involving the application of logic; and formal operations stage, after which the adolescent and adult can apply logical operations to abstract concepts, think skeptically and hypothetically, and use systematic logical reasoning. Piaget has been criticized for overemphasizing the notion of stages, not taking social and cultural influences on development into account, and for describing—but not explaining—development.
  9. Adolescence exists in all societies, but the length of adolescence differs markedly among societies. The end of adolescence depends on how each culture defines adulthood. Puberty is a process that begins at about age 6 or 7 when the adrenal glands begin to produce steroid hormones, peaking in this production with adrenarche at about age 10. Gonadarche usually occurs several years later.
  10. The adolescent brain is a "work in progress." There is explosive brain development throughout the teen years. The quantity of white matter increases, while gray matter decreases in density. This process occurs relatively late in the prefrontal cortex, but early on in and around the limbic system. This competition between the "still under construction" prefrontal cortex and the highly myelinated limbic system may in part explain the tendency for adolescents to be risk-takers and sensation seekers who often engage in reckless behavior. At least 50 percent of adolescents in Western nations drive drunk, use illegal drugs, have unprotected sex, or commit minor crimes. It is statistically abnormal to refrain from *all* such behavior. However, adolescents are not blind to risks and do not perceive

- themselves to be “invulnerable” as has sometimes been assumed. Because synaptic pruning is extensive in the adolescent brain, adolescents shape their own brain development—and consequently their habits and lifelong skills—by their behavior, which to some degree “hardwires” their brains. Thus, researchers propose that it is important for adolescents to consider carefully how they are spending their time.
11. Judith Rich Harris initiated a major controversy in psychology when she proposed that adolescents are primarily socialized by their peers, the media, and other influences outside the home, with parents playing a relatively minor role. Rich used the term *nurture assumption* to describe the view that parents have a profound effect on the way their children turn out in adolescence and adulthood. Harris believes that this view is unfortunately widespread because traditionally, developmental psychologists ignored the influence of genes on the child, and confused correlation with causation in research. Harris uses well-known findings in Diana Baumrind’s research on styles of parenting behavior (authoritarian, authoritative, and permissive styles) to demonstrate how the nurture assumption produces misleading interpretations of psychological research.
  12. During early adolescence, day-to-day conflicts with parents tend to increase, and parent-adolescent relationships are often less warm and affectionate than they once were. However, only 5 percent to 15 percent of adolescents experience the extreme personal problems and severe conflict with parents often believed typical of adolescence. Peer relationships and romantic relationships assume great importance in adolescence, but research tends to focus only on the negative aspects of these relationships.
  13. Moral development in adolescence is complex. Lawrence Kohlberg’s cognitive developmental theory of moral reasoning describes stages of development of moral reasoning through which the child and adolescent supposedly pass—much in the manner of Piaget’s stages of cognitive development. However, Kohlberg’s theory has only received partial support. Moreover, it may be that people do not *reason* when making moral judgments and decisions as much as they arrive at these judgments and decisions intuitively. Positive psychologist Jonathan Haidt’s social intuitionist theory of morality proposes that the moral sense is an evolutionary adaptation or instinct, and that there exist five universal foundations of morality: caring and avoiding harm, fairness/justice, group loyalty, respect for authority, and purity/sanctity. However, among educated middle-class Westerners (particularly those with liberal social/political views), it is primarily caring/avoiding harm and fairness/justice that constitute the entirety of the moral universe.
  14. Unlike societies with coming-of-age rituals, modern Western adolescents move seamlessly into early adulthood. However, early adulthood—a kind of “netherworld” between adolescence and adulthood—is a relatively new stage of life that did not exist prior to the latter part of the 20th century.
  15. Erik Erikson believed that each psychosocial stage of life carried with it a characteristic conflict that needs to be resolved in order that the person may pass successfully to the next stage.

16. According to Erikson, there are eight such stages from infancy to old age. In adolescence the characteristic conflict is identity vs. role confusion. In young-adulthood that conflict is intimacy vs. isolation. In middle-adulthood the conflict is generativity vs. stagnation.
17. Work, marriage, and parenthood continue to be important elements defining adult stages of life. By late adolescence, most people have had work experience and narrowed the available options for adult careers. However, choosing careers is a much more complex task than it once was. Most people work primarily to earn a living, but work offers many other benefits, and people generally derive at least some meaning from their work beyond their paychecks. The number of households headed by a married couple has declined, but the vast majority of people throughout the world express the desire to marry and consider having a happy marriage as an important life goal. Research suggests that for a variety of possible reasons, married people are happier, physically and psychologically healthier, and more financially secure than non-marrieds. Research suggests that there are many costs and benefits to parenthood. Whether the experience is primarily positive or negative depends on factors such as marital status; mental health and expectations for parenthood; social status, social support, and financial status; relationship quality; and gender of parent and child.
18. There is a general slowing down of nervous system activity and movement as a person ages, but the degree to which this occurs is partly dependent on the individual. For most women the most significant physical change in late adulthood is menopause. The idea that men have a stage known as “andropause” is not well supported by evidence. Cognitive functioning in areas such as memory, reasoning about spatial relations of objects, and perceptual speed begins to decline very gradually in the late 20s or early 30s, and decreases more rapidly beginning at about age 50. However, the accumulation of factual knowledge such as vocabulary actually peaks at about age 50 or 60 and then begins to decline. Nevertheless, cognitive decline among the truly aged can be very rapid and marked, although older people also report highest levels of happiness of all groups studied, and aging involves gain as well as loss. Dementia, including Alzheimer’s disease, involves serious memory loss, confusion, problems with speech and comprehending others, and problems negotiating normal activities of daily life. Psychiatric symptoms and apparent personality changes may also occur. However, while the extremely aged have high rates of dementia, dementia is still not an ordinary (“normal”) part of aging. There is controversy over the question of whether cognitive decline associated with aging can be slowed.
19. Death is a psychological and physiological process, not a specific moment. Beliefs that dying involves an invariant series of five stages (as proposed by Elisabeth Kübler-Ross) are exaggerated and often simply mistaken. Dying is also strongly affected by culture and socioeconomic status.

### Section Summaries

#### *How do embryos become infants?*

1. The lifespan perspective in developmental psychology began to emerge in the 1980s, particularly in the work of Paul Baltes. Among the key assumptions in the lifespan perspective Baltes identified are the notions that development is a lifelong process, that it involves loss as well as gain, that it is multiply determined, and that it is plastic.
2. Fertilization occurs when a sperm penetrates the protective layer of cells surrounding a secondary oocyte. The oocyte divides into an ovum and second polar body. The nucleus of the sperm and the nucleus of the ovum fuse, producing a zygote, and conception is complete. If the zygote survives, it attaches itself to the endometrium of the uterus and within 2 weeks becomes an embryo. Within 8 to 9 weeks after conception, the embryonic stage is passed, and the developing organism is a fetus.
3. Teratogens are harmful organisms or substances that can disrupt normal embryonic and fetal development. Cigarettes and alcohol are perhaps the most common serious human teratogens. Cocaine is less harmful to the fetus than once supposed.
4. The newborn comes into the world with primitive and survival reflexes, and with numerous perceptual skills.

#### *How does the infant become a child?*

1. (a) The infant brain is highly plastic, but it also experiences critical periods for development. (b) Infant temperament is partly innate and tends to be stable at least through the toddler years, and sometimes into adulthood. Temperament develops primarily due to the action of genes and nonshared environmental experiences.
2. Mary Ainsworth identified three attachment styles based on research utilizing the Strange Situation: secure, avoidant, and insecure-ambivalent.
3. Attachment theory has been criticized for failing to account for the fact that attachment styles may change from one strange situation test to another, and for incorrectly proposing that the infant generalizes from experiences with attachment figures to the rest of his or her experiences.
4. Early child care is associated with increased academic performance in children if the care is of high quality; but it is also associated with more problem behaviors and decreased social and work skills—regardless of its quality.
5. Very young infants apparently have cognitive skills and competencies much beyond what was previously suspected. Researchers have used research strategies utilizing habituation to measure the cognitive performance of very young infants.
6. Jean Piaget's theory, known as constructivism, suggests that (a) children are active participants in their own development, using assimilation and accommodation to adjust their schemas (models of how the world works); and (b) development proceeds in an orderly and invariant fashion through four developmental stages. These stages are sensorimotor, preoperational, concrete operational, and formal operational.

7. Piaget has been criticized (a) by information-processing theorists for over-emphasizing stages and failing to take into consideration continuity in cognitive development; (b) by sociocultural theorists for failing to take social and cultural influences into account; and (c) by evolutionary theorists for describing development without explaining it.

*How does the child become an adolescent?*

1. Adolescence exists in all known societies, but its nature and length are determined by cultural norms.
2. In the adolescent brain, white matter increases dramatically while gray matter decreases in density. These processes are delayed in the prefrontal cortex relative to other brain regions. Some research suggests that adolescence constitutes a second critical period in brain development.
3. Judith Rich Harris created controversy when she proposed that peers and other influences outside the family are the primary socializers of children. She also claimed that correlations between parenting style and outcome in childhood and adolescence might result from the transmission of genetic traits as well as from child-to-parent effects.
4. Minor conflict does increase in early adolescence between parent and child, particularly between adolescents and their mothers. However, this does not necessarily predict serious problems. Only a small minority of adolescents experience extreme personal problems and conflict with their parents.
5. Peers may influence adolescents' behavior, but people may also select their friends because they exhibit that behavior. Peer influence may have both constructive and destructive consequences.
6. Kohlberg's cognitive developmental theory of moral reasoning includes three stages: preconventional, conventional, and postconventional morality.
7. The social intuitionist theory of moral judgment proposed by Jonathan Haidt proposes that moral judgments are often the result of intuitive and emotional responses rather than conscious reasoning. The theory states that people may then use reasoning to attempt to explain to themselves or others why they have made the moral judgments and decisions.
8. Jonathan Haidt identifies five universal foundations for morality: harm/care, fairness/justice, group loyalty, respect for authority, and purity/sanctity.

*How does the adolescent become an adult?*

1. Erik Erikson advanced the idea that there are eight psychosocial stages from infancy to old age. For each of these stages a person experiences a characteristic conflict that must be successfully resolved. In adolescence the conflict is identity vs. role confusion, and in early adulthood it is intimacy vs. isolation.
2. The large majority of adolescents have had work experience. Depending on the quality of the work experience, teenage employment can have harmful or beneficial consequences.
3. The vast majority of people desire to marry and do marry. Virtually all studies report that, on average, married people of both sexes live longer, are physically

- healthier, psychologically healthier, more secure financially, and happier than nonmarried people.
4. Parenthood has costs and benefits that differ depending on gender, marital status, quality of marital relationship, initial mental health status and expectations for parenthood, and the temperament of the baby.

*How does the adult age?*

1. The climacteric is the gradual process of transition for women from fertility to infertility. The climacteric culminates in menopause, the cessation of menstrual cycles. "Andropause" refers to the reduction in available testosterone in men as they age. The existence of an andropause syndrome is controversial.
2. Cognitive functioning in abilities such as memory and processing speed begins to decline very gradually in the late 20s or early 30s, and decreases more rapidly beginning at about age 50. With regard to the accumulation of knowledge, cognitive ability peaks at about age 50 or 60 and then begins to decline.
3. Dementia involves serious memory loss, confusion, and problems with speech and comprehension. Dementia is not a normal part of aging. The most common cause of dementia is Alzheimer's disease.
4. Social and emotional changes in middle and late adulthood involve gain as well as loss.
5. Death is a process. The meaning and experience of dying vary greatly from person to person and culture to culture. Most current theorists do not believe that a person passes through specific psychological stages as part of the dying process, as once believed.