

## CHAPTER 9

### Development

#### Key Concepts for Chapter 9

<<for Module 27>>

- How do psychologists study the degree to which development is an interaction of hereditary and environmental factors?
- What is the nature of development before birth?
- What factors affect a child during the mother's pregnancy?

#### MODULE 27 Nature and Nurture, and Prenatal Development

Determining the Relative Influence of Nature and Nurture

Developmental Research Techniques

Prenatal Development: Conception to Birth

<<for Module 28>>

- What are the major competencies of newborns?
- What are the milestones of physical and social development during childhood?
- How does cognitive development proceed during childhood?

#### MODULE 28 Infancy and Childhood

The Extraordinary Newborn

**Neuroscience in Your Life:** Young Infants Recognize Emotions Early in Life

The Growing Child: Infancy Through Middle Childhood

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<<for Module 29>>

- What major physical, social, and cognitive transitions characterize adolescence?

### MODULE 29 Adolescence: Becoming an Adult

Physical Development: The Changing Adolescent

Moral and Cognitive Development: Distinguishing Right from Wrong

Social Development: Finding One's Self in a Social World

**Exploring Diversity:** Rites of Passage: Coming of Age Around the World

<<for Module 30>>

- What are the principal physical, social, and intellectual changes that occur in early and middle adulthood, and what are their causes?
- How does the reality of late adulthood differ from the stereotypes about that period?
- How can we adjust to death?

### MODULE 30 Adulthood

Physical Development: The Peak of Health

Social Development: Working at Life

Marriage, Children, and Divorce: Family Ties

The Later Years of Life: Growing Old

**Applying Psychology in the 21<sup>st</sup> Century:** Gaming in Late Adulthood: How Video Games May Improve Cognitive Functioning in Older Adults

**Becoming an Informed Consumer of Psychology:** Adjusting to Death

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We need to keep in mind that these findings regarding child-rearing styles apply primarily to U.S. society, and the high value we place on growing the independence of children and diminishing their reliance on their parents. In contrast, Japanese parents encourage dependence to promote their values of cooperation and community life. These differences in cultural values result in very different philosophies of child rearing. For example, Japanese mothers believe it's a punishment to make a young child sleep alone; thus, many children sleep next to their mothers throughout infancy and toddlerhood (Kawasaki et al., 1994; Dennis et al., 2002; Jones, 2007).

To sum up, a child's upbringing results from the child-rearing philosophy parents hold, the specific practices they use, and the nature of their own and their child's personalities. As is the case with other aspects of development, then, behavior during childhood is a function of a complex interaction of environmental and genetic factors.

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**Study Alert**

Know the four major types of child-rearing practices—authoritarian, permissive, authoritative, and uninvolved—and their effects.

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**Erikson's Theory of Psychosocial Development.** To trace the course of an individual's social development, some theorists have considered how the challenges of society and culture change as an individual matures. Following this path, psychoanalyst Erik Erikson developed one of the

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more comprehensive theories of social development. Erikson (1963) viewed the developmental changes occurring throughout life as a series of eight stages of psychosocial development, four of which occur during childhood. Our psychosocial development, according to Erikson, involves changes in our interactions and understanding of one another as well as in our knowledge and understanding of ourselves as members of society.

Erikson posits that passage through each of the stages necessitates the resolution of a stage-specific crisis or conflict. Accordingly, Erikson characterizes each stage by a pairing of the most positive and most negative aspects of the crisis of that period. Although each crisis is never resolved entirely—and life becomes increasingly complicated as we grow older—it has to be resolved sufficiently to equip us to deal with demands made during the following stage of development.

In Erikson's first stage of psychosocial development, the trust-versus-mistrust stage (from birth to 18 months), infants develop feelings of trust if their physical requirements and psychological needs for attachment are consistently met and their interactions with the world are generally positive. In contrast, inconsistent care and unpleasant interactions with others can lead to mistrust and leave an infant unable to meet the challenges required in the next stage of development.

In the second stage, the autonomy-versus-shame-and-doubt stage (ages 1½ to 3 years), toddlers develop independence and autonomy if exploration and freedom are encouraged, or they experience shame, self-doubt, and unhappiness if they're overly restricted and protected. According to Erikson, the key to the development of autonomy during this period is that the child's caregivers provide the appropriate amount of control. If parents provide too much control, children can't assert themselves and develop their own sense of control over their

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environment; if parents provide too little control, the children become overly demanding and controlling.

Next, children face the crises of the **initiative-versus-guilt stage** (ages 3 to 6). During this stage, children's desire to act independently conflicts with the guilt that comes from the unintended and unexpected consequences of such behavior. Children in this period come to understand that they are persons in their own right, and they begin to make decisions about their behavior. If parents react positively to children's attempts at independence, they help their children resolve the initiative-versus-guilt crisis positively.

The fourth and last stage of childhood is the **industry-versus-inferiority stage** (ages 6 to 12). During this period, increasing competency in all areas, from social interactions to academic skills, characterizes successful psychosocial development. In contrast, difficulties during this stage lead to feelings of failure and inadequacy.

Erikson's theory suggests that psychosocial development continues throughout life, and he proposes four more crises that are faced after childhood (described in the next module). Although his theory has been criticized on several grounds—such as the imprecision of the concepts he employs and his greater emphasis on male development than female development—it remains influential and is one of the few theories that encompass the entire life span.

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### Study Alert

Four of Erikson's stages of psychosocial development occur during childhood: trust-versus-mistrust, autonomy-versus-shame-and-doubt, initiative-versus-guilt, and industry-versus-inferiority.

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## COGNITIVE DEVELOPMENT: CHILDREN'S THINKING ABOUT THE WORLD

Suppose you had two drinking glasses of different shapes—one short and broad and the other tall and thin. Now imagine that you fill the short broad one with soda (filling it to about halfway) and then poured the liquid from that glass into the tall one. The soda in the second glass would appear to fill it to about three-quarters. Because of this difference in between the two fill-lines, is there more soda in the second glass than in the first?

You might think that such a simple question hardly deserves an answer; of course there's no difference in the amount of soda in the two glasses. However, most 4-year-olds are likely to respond that there's more soda in the second glass. Even if you then poured the soda back into the short glass, the 4-year-old would say there's now less soda than there'd been in the taller glass.

Why are young children confused by this problem? The reason isn't immediately obvious. Anyone who's observed preschoolers should be impressed by how far they've progressed from the early stages of development. Preschoolers speak with ease, know the alphabet, count, play complex games, use computers, tell stories, and communicate ably. Yet despite this seeming sophistication, there are deep gaps in their understanding of the world. Some theorists have suggested that children can't understand certain ideas and concepts until they reach a particular stage of **cognitive development**—the process by which a child's understanding of the world changes with age and experience. In contrast to the theories of physical and social development discussed earlier (such as those of Erikson), theories of cognitive development explain the quantitative and qualitative intellectual advances that occur during development.

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**Piaget's Theory of Cognitive Development.** No theory of cognitive development has had more impact than that of Swiss psychologist Jean Piaget. Piaget (1970) suggested that children around the world proceed through a series of stages of intellectual development in a fixed order. He maintained that these stages differ not only in the *quantity* of information acquired at each stage but in the *quality* of the knowledge and understanding as well. Taking an interactionist point of view, he suggested that movement from one stage to the next occurs when a child reaches an appropriate level of maturation *and* is exposed to relevant types of experiences. Piaget assumed that, without having such experiences, children can't reach their highest level of cognitive growth.

Piaget proposed four stages: the sensorimotor, preoperational, concrete operational, and formal operational (see Figure 9). Let's examine each and the approximate ages that they span.

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*Sensorimotor Stage: Birth to 2 Years.* During the **sensorimotor stage**, children base their understanding of the world primarily on touching, sucking, chewing, shaking, and manipulating objects. At the initial part of the stage, children have relatively little competence in representing the environment by using images, language, or other kinds of symbols. Consequently, infants lack what Piaget calls **object permanence**, the awareness that objects—and people—continue to exist even if they're out of sight.

How can we know that children lack object permanence? Although we can't ask infants, we can observe their reactions when a toy they're playing with is hidden from their sight. Until approximately 9 months of age, children will make no attempt to locate the hidden toy no matter

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how obvious its hiding place. However, soon after that age they'll begin an active search for the missing object, indicating that they've developed a mental representation of the toy. This object permanence signals a critical development during the sensorimotor stage.

*Preoperational Stage: 2 to 7 Years.* The most important development during the **preoperational stage** is the use of language. Children develop internal representational systems that allow them to describe people, events, and feelings. They even use symbols in play, pretending, for example, that a book pushed across the floor is a car.

Although children use more advanced thinking in this stage than they did in the earlier sensorimotor stage, their thinking is still qualitatively inferior to that of adults. We see this when

we observe a preoperational child using **egocentric thought**, or thinking that the world operates entirely from his or her own perspective. A preoperational child thinks that everyone shares his or her perspective and knowledge. Thus, children's stories and explanations to adults can be maddeningly uninformative because they're delivered without context. For example, a preoperational child may start a story saying, "He wouldn't let me go," neglecting to mention who "he" is or where the narrator intends to go. We also see egocentric thinking when children at the preoperational stage play hiding games. For instance, 3-year-olds frequently hide with their faces against a wall, by covering their eyes—although they're still in plain view. It seems to them that if they can't see you, then no one else is able to see them, because they assume that others share their unseeing view of the world.

In addition, preoperational children don't yet understand the **principle of conservation**—the knowledge that quantity is unrelated to the arrangement and physical appearance of objects. Children who haven't mastered this concept don't know that the amount, volume, or length of an object doesn't change when its shape or configuration changes. The question about the two

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sometimes experience symptoms such as hot flashes or sudden surges of heat. Many symptoms can be treated with hormone therapy (HT) to adjust levels of the hormones estrogen and progesterone.

However, hormone therapy poses several dangers, such as an increase in the risk of breast cancer, blood clots, and coronary heart disease. These uncertainties make routine use of HT controversial. Currently, the medical consensus seems to be that younger women with severe menopausal symptoms ought to consider HT on a short-term basis, whereas HT is less appropriate for older women after menopause (Rossouw et al., 2007; Lindh-Åstrand et al., 2007; MacLennan, 2009).

Menopause was once blamed for a variety of psychological symptoms, including depression and memory loss. However, such difficulties, if they do occur, may be caused by women's expectations about reaching "old age" in a society that highly values youth. For this reason, women's reactions to menopause vary significantly across cultures; the more a society values old age, the less difficulty its women have during menopause (Elliot, Berman, & Kim, 2002; Beyene, Gilliss, & Lee, 2007).

For men, the aging process during middle adulthood is somewhat subtler. There are no physiological signals of increasing age equivalent to the end of menstruation in women; that is, no male menopause exists. In fact, men remain fertile and capable of fathering children until well into late adulthood. However, some gradual biological reproductive decline occurs: Sperm production decreases, and the frequency of orgasm tends to diminish. Once again, though, any psychological difficulties associated with these changes are usually brought about not so much by physical deterioration as by the inability of an aging individual to meet the exaggerated standards of youthfulness in our culture.

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## Social Development: Working at Life

Whereas physical changes during adulthood reflect developments of a quantitative nature, social developmental transitions are qualitative and more profound. During this period, people typically launch themselves into careers, marriage, and families.

The entry into early adulthood is usually marked by leaving one's childhood home and entering the work world. People envision their life goals and make career choices. During this time, lives and identities often center on building careers (Vaillant & Vaillant, 1990; Levinson, 1990, 1992).

In their early 40s, however, many begin to question their lives as they enter a period called the *midlife transition*. The realization that life will eventually end often influences in their thinking more, leading them to question their past accomplishments (Gould, 1978).

Although popular opinion suggests that physical aging and dissatisfaction with one's life marks a so-called "midlife crisis," there is little evidence for such a "crisis." In fact, for most people the passage into middle age is relatively calm. Most 40-year-olds view their lives and accomplishments positively enough to proceed smoothly through midlife, and the 40s and 50s are often a particularly rewarding period. Rather than looking too far into the future, many concentrate on the present, with their involvement with families, friends, and other social groups taking on new importance. A major developmental thrust of this period is coming to terms with one's circumstances (Whitbourne, 2000, 2010).

Finally, during the last stages of adulthood people tend to become more accepting of others and of their own lives and are less concerned about issues or problems that once bothered them. Most come to accept that death is inevitable, and they try to understand their

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accomplishments in terms of the broader meaning of life. Although some may begin for the first time to label themselves as “old,” many also feel a sense of wisdom and greater freedom to enjoy life (Baltes & Kunzmann, 2003; Miner-Rubino, Winter, & Stewart, 2004; Ward-Baker, 2007).

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## Marriage, Children, and Divorce: Family Ties

In the typical fairy tale, a dashing young man and a beautiful young woman marry, have children, and live happily ever after. However, that scenario doesn't match the realities of love and marriage in the 21<sup>st</sup> century. Today, it's just as likely that the man and woman would first live together, then get married and have children, but ultimately get divorced.

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The percentage of U.S. households made up of unmarried couples has increased dramatically over the last 2 decades. At the same time, the average age at which marriage takes place is higher than at any time since the turn of the last century. These changes are dramatic, and they suggest that the institution of modern marriage has evolved considerably from earlier historical periods.

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When people do marry, the probability of divorce is high, especially for younger couples. Even though divorce rates have been declining since peaking in 1981, about half of all first marriages end in divorce. Before age 18, two-fifths of children will see their parents' marriages end. Moreover, the rise in divorce is not just a U.S. phenomenon: The divorce rate has accelerated over the last several decades in most industrialized countries. For some countries, this increase has been enormous. In South Korea, for example, the divorce rate quadrupled, from 11% to 47% in the 12-year period ending in 2002 (Schaefer, 2000; Lankov, 2004; Olson & DeFrain, 2005).

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Changes in marriage together with divorce trends have doubled the number of single-

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parent households in the United States over the last 2 decades. Almost 25% of all family households are now headed by one parent, compared with 13% in 1970. If present trends continue, almost three-fourths of American children will spend some portion of their lives in a single-parent family before they turn 18. For children in minority households, these numbers are even higher. Almost 60% of all black children and more than one-third of Hispanic children live in homes with only one parent. Furthermore, in most single-parent families, it's the mother rather than the father with whom the children reside—a phenomenon consistent across racial and ethnic groups throughout the industrialized world (U.S. Bureau of the Census, 2000).

What are the economic and emotional consequences for children living in homes with only one parent? Single-parent families are often economically less well off, and this economic disadvantage has an impact on children's opportunities. Over one-third of single-mothers with children have incomes below the poverty line. In addition, quality child care at an affordable price is often hard to find. Furthermore, for children of divorce, the parents' separation is often a painful experience that may create obstacles later in life for children establishing close relationships. In addition, children may blame themselves for the breakup or feel pressure to take sides (U.S. Bureau of the Census, 2000; Wallerstein et al., 2000; Liu, He, & Wu, 2007).

Most evidence, however, suggests that children from single-parent families are no less well adjusted than are those from two-parent families. In fact, children growing up in a harmonious single-parent family may be more successful than others in a two-parent family that engages in continuous conflict (Harold et al., 1997; Clarke-Stewart et al., 2000; Kelly, 2000; Olson & DeFrain, 2006).

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## CHANGING ROLES OF MEN AND WOMEN: THE TIME OF THEIR

## LIVES

One of the major changes in family life during the last 2 decades has been the evolution of men's and women's roles. More women than ever before juggle being wives, mothers, and wage earners—in contrast to women in traditional marriages where the husband is the sole wage earner and the wife's primary responsibility is care of the home and children.

Close to 75% of all married women with school-age children are now employed outside the home, and 55% of mothers with children under age 6 are working. In the mid-1960s, only 17% of mothers of 1-year-olds worked full-time; now, more than half are in the labor force (U.S. Bureau of the Census, 2001; Halpern, 2005).

Unfortunately, most married working women aren't free of household responsibilities.

Even in marriages where spouses hold jobs of similar status and similar workday hours, the distribution of household tasks between husbands and wives hasn't changed substantially.

Working wives are still more likely than husbands to feel responsible for traditional homemaking tasks such as cooking and cleaning. By contrast, husbands still view their primary responsibility for household tasks like repairing broken appliances and doing outside yard work (Ganong & Coleman, 1999; Juster, Ono, & Stafford, 2002).

**Women's "Second Shift."** The number of hours put in by working mothers can be staggering.

One survey, for instance, found that if we add the number of hours they work on the job and in the home, employed mothers of children under age 3 log an average of 90 hours per week! This additional work performed by women is sometimes called the "second shift." National surveys show women who are both employed and mothers put in an extra month of 24-hour days during the course of a year. Researchers see similar patterns in many developing societies throughout

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the world, with women working at full-time jobs and also retaining primary responsibility for child care (Hochschild, 2001; Jacobs & Gerson, 2004; Bureau of Labor Statistics, 2007).

Consequently, rather than having careers become a substitute for what women do at home, they often simply add onto the role of homemaker. It's not surprising that some wives resent it when husbands spend less time on child care and housework than wives expected before the birth of their children (Kiecolt, 2003; Gerstel, 2005; Fagan & Press, 2008).

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## The Later Years of Life: Growing Old

I've always enjoyed doing things in the mountains—hiking or, more recently, active cliff-climbing. The more difficult the climb, the more absorbing it is. The climbs I really remember are the ones I had to work on. Maybe a particular section where it took two or three tries before I found the right combination of moves that got me up easily—and, preferably, elegantly. It's a wonderful exhilaration to get to the top and sit down and perhaps have lunch and look out over the landscape and be so grateful that it's still possible for me to do that sort of thing. (Lyman Spitzer, age 74, quoted in Kotre & Hall, 1990, pp. 358–359)

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If you can't quite picture a 74-year-old rock climbing, some rethinking of your view of late adulthood may be in order. In spite of the societal stereotype of "old age" as a time of inactivity and physical and mental decline, gerontologists (specialists who study aging), are beginning to paint a very different portrait of late adulthood.

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By focusing on the period of life that starts at approximately age 65, gerontologists are

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clarifying the capabilities of older adults. Their work is demonstrating that significant developmental processes continue even during so-called old age. And as life expectancy increases, the number of people who reach older adulthood will continue to grow substantially. Consequently, developing an understanding of late adulthood has become a critical priority for psychologists (Birren, 1996; Moody, 2000; Schaie, 2005).

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### PHYSICAL CHANGES IN LATE ADULTHOOD: THE AGING BODY

Napping, eating, walking, conversing. It probably doesn't surprise you that these relatively nonstrenuous activities represent the typical pastimes of late adulthood. But it is striking that these activities are identical to the most common leisure activities reported in a survey of college students as well (Harper, 1978). Although the students cited more active pursuits—such as sailing and playing basketball—as their favorite activities, in actuality they engaged in such sports relatively infrequently, spending most of their free time napping, eating, walking, and conversing.

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Although the leisure activities that older adults engage in may not differ all that much from those younger people pursue, many physical changes are, of course, brought about by the aging process. The most obvious pertain to appearance—hair that thins and turns gray, skin that wrinkles and folds, and sometimes a slight loss of height as the thickness of the disks between vertebrae in the spine decreases—but subtler changes also occur in the body's biological functioning. For example, sensory capabilities decrease as a result of aging: Vision, hearing, smell, and taste become less sensitive. Reaction time slows, and physical stamina changes (Stenklev & Laukli, 2004; Schieber, 2006; Madden, 2007).

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What are the reasons for these physical declines? **Genetic preprogramming theories of**

**aging** suggest that human cells have a built-in time limit to their **ability to reproduce**. These theories suggest that after a certain time, cells stop dividing or become harmful to the body—as if a kind of automatic self-destruct button had been pushed. In contrast, **wear-and-tear theories of aging** suggest that the mechanical functions of the body simply work less efficiently as people age. Waste by-products of energy production eventually accumulate, and mistakes are made when cells divide. Eventually the body, in effect, wears out, just **like an old automobile does** (Ly et al., 2000; Miquel, 2006; Hayflick, 2007).

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**Study Alert**

Two major theories of aging—the genetic preprogramming and the wear-and-tear views—**explain some of the physical changes that happen in older adults**.

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Evidence supports both the genetic preprogramming and the wear-and-tear views, and it may be that both processes contribute to natural aging. **However, it's clear that physical aging is not a disease, but a natural biological process. Many physical functions don't decline with age.** For example, sex remains pleasurable well into old age (although the frequency of sexual activity **tends to decrease**), and **some even report that the pleasure they derive from sex increases during late adulthood** (Gelfand, 2000; DeLamater & Sill, 2005).

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**COGNITIVE CHANGES: THINKING ABOUT—AND DURING—LATE ADULTHOOD**

At one time, many gerontologists would have agreed with the **prevailing notion that older adults are forgetful and confused**. Today, however, most research indicates that this assessment is far



from accurate about older people's actual capabilities.

One reason for the change in view is that more sophisticated research techniques exist for studying the cognitive changes of late adulthood. For example, if we were to give a group of older adults an IQ test, we might find that the average score was lower than the score achieved by a same-sized group of younger people. We might conclude that this signifies a decline in intelligence. Yet if we looked a little more closely at the specific test, we might find that that conclusion was unwarranted. For instance, many IQ tests base tasks on speed or on physical performance (such as arranging a group of blocks). In such cases, a lower test score may be due to decreased reaction time—a physical decline that accompanies late adulthood and has little or nothing to do with the intellectual capability of older adults.

Other difficulties hamper research into cognitive functioning during late adulthood. For example, seniors are often less healthy than younger adults; when only healthy older adults are compared to healthy younger adults, intellectual differences are far less evident. Furthermore, for current generations, the average number of years in school is often lower in older adults (for historical reasons) than in younger ones, and older adults may be less motivated to perform well on intelligence tests than their younger counterparts. Finally, traditional IQ tests may not be the best measures of intelligence in late adulthood; older adults sometimes perform better on tests of practical intelligence than do younger individuals (Willis & Schaie, 1994; Dixon & Cohen, 2003).

Still, some declines in intellectual functioning during late adulthood do occur, although the pattern of age differences is not uniform for all types of cognitive abilities (see Figure 2). In general, skills relating to fluid intelligence (that involves information-processing skills such as memory, calculations, and analogy solving) show declines in late adulthood. In contrast, skills

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relating to *crystallized intelligence* (intelligence based on the accumulation of information, skills, and strategies learned through experience) remain steady and in some cases actually improve (Rozencwajg et al., 2005; van Hooren et al., 2007; Kaufman, Johnson, & Liu, 2008).

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Even when changes in intellectual functioning **do** occur during late adulthood, people often are able to compensate for any decline. They can still learn new things; it may just take more time. Furthermore, when the elderly are taught strategies for dealing with new problems, this can prevent declines in performance (Saczynski, Willis, & Schaie, 2002; Cavallini, Pagnin, & Vecchi, 2003; Peters et al., 2007; also see the *Applying Psychology in the 21<sup>st</sup> Century* box).

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## Applying Psychology in the 21<sup>st</sup> Century

### Gaming in Late Adulthood:

#### How Video Games May Improve Cognitive Functioning in Older Adults

Have you ever frittered away an afternoon—or maybe even an entire day—playing a video game like *World of Warcraft* or *Grand Theft Auto*? A lot of people do. Perhaps you've told yourself that you're doing something to improve yourself, such as increasing your eye-hand coordination or honing your mental skills, beyond just whiling away the time.

Turns out you may have been right, according to recent research that looked at the benefits of playing video games. And that may be especially true if you're an older adult playing video games.

Claims that playing video games can enhance skills and even improve cognitive ability are not new. There are even games marketed specifically as "mental workouts" that supposedly sharpen brain skills. But it's only recently that researchers have become interested in the possible use of video games to help slow the normal declines of cognitive functioning in late adulthood.

Although research has found that activities that involve cognitive stimulation are generally helpful, up to now it hasn't been clear if video games provide the right kind of stimulation in the right amounts to do the trick (Tsai et al., 2008; Nunes & Kramer, 2009).

Recent studies are encouraging, however. In one study, older adults played a real-time strategic video game called *Rise of Nations* that had them managing and defending an empire of cities for almost 24 hours over several sessions. Not only did their skill at playing the game improve over time, but they also improved at real-world skills such as task switching, short-term memory, and reasoning (Basak et al., 2008).

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In another study, groups of older and younger adults received 5 weeks of computerized cognitive skills training that became progressively more challenging. After the training, both groups showed noticeable increases in cognitive functioning, both in tests and in their daily lives. What's more, the effects tended to last and could be measured several months after the training had concluded (Westerberg et al., 2008).

The potential cognitive-improvement benefits of video games to those in late adulthood are so promising that the National Science Foundation recently awarded a team of researchers at North Carolina State University and Georgia Tech a 4-year, million dollar grant to study the effects of playing selected Nintendo Wii games on older adults. Researchers will investigate not only what cognitive improvements can be realized from gaming, but also what aspects of game playing (such as the novelty of the games or the social interaction they require) are responsible for cognitive improvements. Ultimately they hope to create new games based on the research that maximizes the cognitive benefit to those in late adulthood (Hamilton, 2009).

**RETHINK**

- What aspects of video games do you think would most help prevent cognitive decline in late adulthood?
- What other activities do you think would be helpful to avert cognitive deterioration?

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## MEMORY CHANGES IN LATE ADULTHOOD: ARE OLDER ADULTS FORGETFUL?

One of the characteristics most frequently attributed to aging during late adulthood is forgetfulness. How accurate is this assumption?

Most evidence suggests that memory change is not an inevitable part of the aging process.

For instance, research shows that older people in cultures in which older adults are held in high

esteem, such as China, are less likely to show memory losses than are those living in cultures where there's an expectation that memory will decline. Similarly, when older people in Western societies are reminded of the advantages of age (for example, 'age brings wisdom'), they tend to do better on tests of memory (Levy, 1996; Hess, Hinson, & Statham, 2004; Dixon et al., 2007).

Even when people show memory declines during late adulthood, these deficits are limited to certain types of memory. For instance, losses tend to be limited to episodic memories that relate to specific experiences in people's lives. Other types of memories, such as semantic memories (general knowledge and facts) and implicit memories (memories that we're not consciously aware of), are largely unaffected by age (Fleischman et al., 2004; Mitchell & Schmitt, 2006; St. Jacques & Levine, 2007).

Declines in episodic memories can often be traced to changes in the lives of older adults. For instance, it's not surprising that a retired person, who no longer faces the same consistent intellectual challenges from a job, may get less practice using memory or even be less motivated to remember things, leading to an apparent decline in memory. Even in cases in which long-term memory declines, older adults can profit from training that targets memory skills (Fritsch et al., 2007; West, Bagwell, & Dark-Freudeman, 2007).

In the past, older adults with severe cases of memory decline, accompanied by other cognitive difficulties, were said to suffer from senility. *Senility* is a broad, imprecise term typically applied

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to older adults who experience progressive deterioration of mental abilities, including memory loss, disorientation to time and place, and general confusion. Once thought to be an inevitable state that accompanies aging, most gerontologists now view senility as a label that's outlived its usefulness. Rather than seeing senility as the vague cause of certain symptoms, symptoms are now linked to other physical or biological factors.

Some cases of memory loss, however, are produced by actual disease. For instance, Alzheimer's disease is a progressive brain disorder that leads to a gradual and irreversible decline in cognitive abilities. Nineteen percent of people age 75 to 84 have Alzheimer's, and almost 50% of those over age 85 are affected by the disease. Unless a cure is found, approximately 14 million people are projected to have Alzheimer's by 2050—a rate more than three times the current number (Cowley, 2000b; Feinberg, 2002; Lovestone, 2005; Rogers, 2007).

Alzheimer's occurs when production of the *beta amyloid precursor protein* goes awry, producing large clumps of cells that trigger inflammation and deterioration of nerve cells. The brain shrinks, neurons die, and areas of the hippocampus and frontal and temporal lobes deteriorate. So far, there's no effective treatment (Wolfe, 2006; Medeiros et al., 2007; Behrens, Lendon, & Roe, 2009).

In other cases, cognitive decline may be caused by overmedication or short-term anxiety and depression, which can be treated successfully. The danger is that people with such symptoms may be left untreated, thereby continuing their decline (Selkoe, 1997; Sachs-Ericsson et al., 2005).

In sum, declines in cognitive functioning in late adulthood for the most part aren't inevitable. The key to maintaining cognitive skills may lie in continued intellectual stimulation. Like the

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rest of us, older adults need a stimulating environment to hone and maintain their skills (Bosma et al., 2003; Glisky, 2007; Hertzog et al., 2008).

### Study Alert

It's important to be able to describe the nature of intellectual changes during late adulthood.

## THE SOCIAL WORLD OF LATE ADULTHOOD: OLD BUT NOT ALONE

Just as the view that old age predictably means mental decline has proved to be wrong, so has the view that late adulthood inevitably brings loneliness. People in late adulthood most often see themselves as functioning members of society, with only a small number of them reporting that loneliness is a serious problem (Binstock & George, 1996; Jylha, 2004).

Certainly, late adulthood brings significant challenges. People who have spent their adult lives working undergo a major shift in their role when they retire. Moreover, many must face the death of a spouse. Especially if the marriage has been a long and happy one, the death of a partner means the loss of a companion, confidante, and lover. These losses can likewise bring about changes in economic well-being.

There's no single way to age successfully. According to one early theory, the **disengagement theory of aging**, aging produces a gradual withdrawal from the world on physical, psychological, and social levels. This disengagement serves the purpose of providing an opportunity for increased reflectiveness and decreased emotional investment in others at a time of life when social relationships will inevitably be ended by death (Adams, 2004; Wrosch, Bauer, & Scheier, 2005).

However, little research supports disengagement theory. Consequently, alternative theories

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have arisen. According to the **activity theory of aging**, people who age most successfully are those who maintain the interests, activities, and level of social interaction they experienced during middle adulthood. Activity theory argues that late adulthood should reflect a continuation, as much as possible, of the activities that people participated in during earlier times of their lives (Crosnoe & Elder, 2002; Nimrod & Kleiber, 2007).

Although most research is supportive of activity theory, not everyone in late adulthood needs a life filled with activities and social interaction to be happy; as in every stage of life, some older adults are just as satisfied leading a relatively inactive, solitary existence.

What may be more important is how people view the aging process: Evidence shows that positive self-perceptions of aging are associated with increased longevity (Levy et al., 2002; Levy & Myers, 2004).

Regardless of how they age, most people engage in a process of life review, during which they examine and evaluate their lives. By remembering and reconsidering what has occurred in the past, people in late adulthood often reach a better understanding of themselves, sometimes resolving lingering problems and conflicts, and face their lives with greater wisdom and serenity.

Clearly, people in late adulthood are not just marking time until death. Rather, old age is a time of continued growth and development, as important as any other period of life.

## **BECOMING AN INFORMED CONSUMER OF PSYCHOLOGY**

### **Adjusting to Death**

At some time in our lives, we all face death—certainly our own, as well as the deaths of friends, loved ones, and even strangers. Although there's nothing more inevitable in life, death remains a frightening, emotion-laden topic. Little is more stressful than the death of a loved one or the

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contemplation of our own imminent death, and preparing for death is one of our most crucial developmental tasks (Aiken, 2000).

A few generations ago, talk of death was taboo. The topic was simply never mentioned, including with those who were dying, and gerontologists had little to say about it. That changed, however, with the pioneering work of Elisabeth Kübler-Ross (1969), who brought the subject of death into the open with her observation that those facing impending death tend to move through five broad stages:

- *Denial*. In this stage, people resist the idea that they're dying. Even if told that their chances for survival are small, most refuse to admit that they're facing death.
- *Anger*. After moving beyond the denial stage, dying people become angry—angry at people around them who are in good health, angry at medical professionals for being ineffective, angry at God.
- *Bargaining*. Anger leads to bargaining, as the dying try to think of ways to postpone death. They may decide to dedicate their lives to religion, for example, if God spares them; they may say, "If only I can live to see my son married, I'll accept death then."
- *Depression*. When dying people conclude that bargaining is of no use, they move to the next stage: depression. They realize that their lives really are coming to an end, leading to what Kübler-Ross calls "preparatory grief" for their own

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- *Acceptance*. In this stage, people accept impending death. Usually they're unemotional and uncommunicative; it's as if they've made peace with themselves and are expecting death with no bitterness.

It's important to keep in mind that not everyone experiences each of these stages or in the same way. In fact, Kübler-Ross's stages pertain only to individuals who are fully aware that they're dying and have the time to evaluate their impending death. Furthermore, vast differences occur in the way individuals react to impending death. The specific cause and duration of dying, as well as the person's sex, age, and personality and the extent of support received from family and friends, all have an impact on how people respond to death (Carver & Scheier, 2002; Coyle, 2006).

Few of us enjoy contemplating death. Yet awareness of its psychological aspects and consequences can make its inevitable arrival less anxiety-producing and perhaps more understandable.

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## RECAP/EVALUATE/RETHINK

### RECAP

What are the principal physical, social, and intellectual changes that occur in early and middle adulthood, and what are their causes?

- Early adulthood marks the peak of physical health. Physical changes usually occur gradually in men and women during adulthood. (p. xx)
- One major physical change occurs at the end of middle adulthood for women: They begin menopause, after which they're no longer fertile. (p. xx)
- During middle adulthood, people often experience a midlife transition triggered by the notion that life will end becomes more important. In some cases this may lead to a midlife crisis, although typically the passage into middle age is relatively calm. (p. xx)
- As aging continues during middle adulthood, people realize in their 50s that their lives and accomplishments are fairly set, and they try to come to terms with them. (p. xx)
- Among the important developmental milestones during adulthood are marriage, family changes, and divorce. Another important determinant of adult development is work or career. (p. xx)

How does the reality of late adulthood differ from stereotypes about that period?

- Old age may bring marked physical declines caused by genetic preprogramming or physical wear and tear. Although the activities of those in late adulthood are not all that different from those of younger people, older adults experience declines in reaction time, sensory abilities, and physical stamina. (p. xx)
- Intellectual declines are not an inevitable part of aging. Fluid intelligence does decline

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with age, and long-term memory abilities are sometimes impaired. In contrast, crystallized intelligence shows slight increases with age, and short-term memory remains at about the same level. (p. xx)

• Although disengagement theory sees successful aging as a process of gradual withdrawal from the physical, psychological, and social worlds, there is little research supporting this view. Instead, activity theory—the view that the maintaining interests and activities from earlier years leads to successful aging—is a more accurate explanation. (p. xx)

How can we adjust to death?

• According to Kübler-Ross, dying people commonly move through five stages as they face death: denial, anger, bargaining, depression, and acceptance. (p. xx)

### EVALUATE

1. Rob recently turned age 40 and surveyed his goals and accomplishments to date. Although he's accomplished a lot, he realized that many of his goals won't be met during his lifetime.

This stage is called a \_\_\_\_\_.

2. In households where both partners have similar jobs, the division of labor that generally occurs is the same as in “traditional” households where the husband works and the wife stays at home. True or false?

3. \_\_\_\_\_ theories suggest that there is a maximum time span in which cells are able to reproduce. This time limit explains the eventual breakdown of the body.

4. Lower IQ test scores during late adulthood don't necessarily mean a decrease in intelligence.

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True or false?

5. During old age, a person's \_\_\_\_\_ intelligence continues to increase, whereas \_\_\_\_\_ intelligence may decline.
6. In Kübler-Ross's \_\_\_\_\_ stage, people resist the idea of death. In the \_\_\_\_\_ stage, they attempt to make deals to avoid death, and in the \_\_\_\_\_ stage, they passively await death.

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### RETHINK

1. Is the possibility that life may be extended for several decades a mixed blessing? What societal consequences might an extended life span bring?
2. *From the perspective of a health-care provider:* What sorts of recommendations would you make to older patients about how to deal with aging? How would you handle someone who believed that getting older had only negative consequences?

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### Answers to Evaluate Questions

1. midlife transition; 2. true; 3. genetic preprogramming; 4. true; 5. crystallized, fluid; 6. denial, bargaining, acceptance

### KEY TERMS

emerging adulthood p. xx

menopause p. xx

genetic preprogramming theories of aging p. xx

wear-and-tear theories of aging p. xx

Alzheimer's disease p. xx

disengagement theory of aging p. xx

activity theory of aging p. xx

life review p. xx

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