Module 51

Adolescence: Physical and Cognitive Development


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Module Learning Objectives

51-1 Define *adolescence*, and identify the major physical changes during this period.

51-2 Describe adolescent cognitive and moral development, according to Piaget, Kohlberg, and later researchers.

51-1 How is *adolescence* defined, and what physical changes mark this period?

Many psychologists once believed that childhood sets our traits. Today's developmental psychologists see development as lifelong. As this *life-span perspective* emerged, psychologists began to look at how maturation and experience shape us not only in infancy and childhood, but also in adolescence and beyond. Your story is still being written. **Adolescence**—the years spent morphing from child to adult—starts with the physical beginnings of sexual maturity and ends with the social achievement of independent adult status. In some cultures, where teens are self-supporting, this means that adolescence hardly exists.

adolescence the transition period from childhood to adulthood, extending from puberty to independence.

G. Stanley Hall (1904), one of the first psychologists to describe adolescence, believed that the tension between biological maturity and social dependence creates a period of "storm and stress." Indeed, after age 30, many who grew up in independence-fostering Western cultures look back on their teenage years as a time they would not want to relive, a time when their peers' social approval was imperative, their sense of direction in life was in flux, and their feeling of alienation from their parents was deepest (Arnett, 1999; Macfarlane, 1964).

But for many, adolescence is a time of vitality without the cares of adulthood, a time of rewarding friendships, heightened idealism, and a growing sense of life's exciting possibilities.

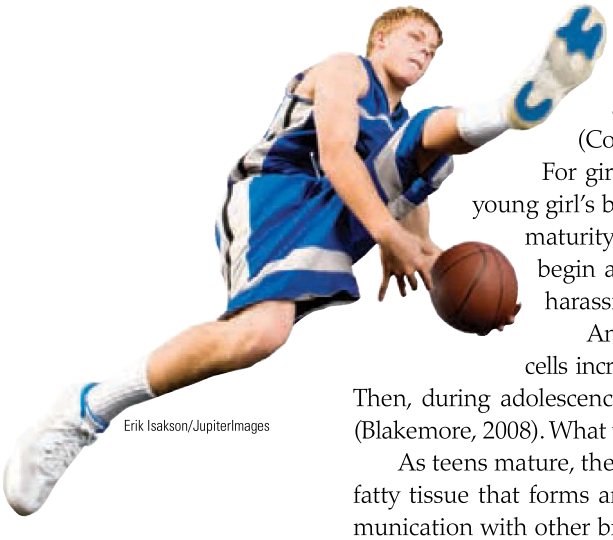
Try This

How will you look back on your life 10 years from now? Are you making choices that someday you will recollect with satisfaction?

Physical Development

Adolescence begins with *puberty*, the time when we mature sexually. Puberty follows a surge of hormones, which may intensify moods and which trigger a series of bodily changes, described in Module 53.

Just as in the earlier life stages, the *sequence* of physical changes in puberty (for example, breast buds and visible pubic hair before *menarche*—the first menstrual period) is far more predictable than their *timing*. Some girls start their growth spurt at 9, some boys as late as age 16. Though such variations have little effect on height at maturity, they may have psychological consequences: It is not only when we mature that counts, but how people react to our physical development.



Erik Isakson/JupiterImages

For boys, early maturation has mixed effects. Boys who are stronger and more athletic during their early teen years tend to be more popular, self-assured, and independent, though also more at risk for alcohol use, delinquency, and premature sexual activity (Conley & Rudolph, 2009; Copeland et al., 2010; Lynne et al., 2007). For girls, early maturation can be a challenge (Mendle et al., 2007). If a young girl's body and hormone-fed feelings are out of sync with her emotional maturity and her friends' physical development and experiences, she may begin associating with older adolescents or may suffer teasing or sexual harassment (Ge & Natsuaki, 2009).

An adolescent's brain is also a work in progress. Until puberty, brain cells increase their connections, like trees growing more roots and branches. Then, during adolescence comes a selective pruning of unused neurons and connections (Blakemore, 2008). What we don't use, we lose.

As teens mature, their frontal lobes also continue to develop. The growth of *myelin,* the fatty tissue that forms around axons and speeds neurotransmission, enables better communication with other brain regions (Kuhn, 2006; Silveri et al., 2006). These developments bring improved judgment, impulse control, and long-term planning.

Maturation of the frontal lobes nevertheless lags behind that of the emotional limbic system. Puberty's hormonal surge and limbic system development help explain teens' occasional impulsiveness, risky behaviors, and emotional storms—slamming doors and turning up the music (Casey et al., 2008). No wonder younger teens (whose unfinished frontal lobes aren't yet fully equipped for making long-term plans and curbing impulses) so often succumb to the tobacco corporations, which most adult smokers could tell them they will later regret. Teens actually don't underestimate the risks of smoking—or fast driving or unprotected sex. They just, when reasoning from their gut, weigh the immediate benefits more heavily (Reyna & Farley, 2006; Steinberg, 2007, 2010). They seek thrills and rewards, but they can't yet locate the brake pedal controlling their impulses.

"Young man, go to your room and stay there until your cerebral cortex matures."

So, when Junior drives recklessly and academically self-destructs, should his parents reassure themselves that "he can't help it; his frontal cortex isn't yet fully grown"? They can at least take hope: The brain with which Junior begins his teens differs from the brain with which he will end his teens. Unless he slows his brain development with heavy drinking—leaving him prone to impulsivity and addiction—his frontal lobes will continue maturing until about age 25 (Beckman, 2004; Crews et al., 2007).

In 2004, the American Psychological Association joined seven other medical and mental health associations in filing U.S. Supreme Court briefs arguing against the death penalty for 16- and 17-year-olds. The briefs documented the teen brain's immaturity "in areas that bear upon adolescent decision making." Teens are "less guilty by reason of adolescence," suggested psychologist Laurence Steinberg and law professor Elizabeth Scott (2003; Steinberg et al., 2009). In 2005, by a 5-to-4 margin, the Court concurred, declaring juvenile death penalties unconstitutional.

"If a gun is put in the control of the prefrontal cortex of a hurt and vengeful 15-year-old, and it is pointed at a human target, it will very likely go off." -National Institutes of Health brain scientist Daniel R. Weinberger, "A Brain Too Young for Good Judgment," 2001

Cognitive Development

51-2 How did Piaget, Kohlberg, and later researchers describe adolescent cognitive and moral development?

During the early teen years, reasoning is often self-focused. Adolescents may think their private experiences are unique, something parents just could not understand: "But, Mom, you don't really know how it feels to be in love" (Elkind, 1978). Capable of thinking about

their own thinking, and about other people's thinking, they also begin imagining what others are thinking about *them*. (They might worry less if they understood their peers' similar self-absorption.) Gradually, though, most begin to reason more abstractly.

"When the pilot told us to brace and grab our ankles, the first thing that went through my mind was that we must all look pretty stupid." -Jeremiah Rawlings, age 12, after a 1989 DC-10 crash in Sioux City, Iowa

Developing Reasoning Power

When adolescents achieve the intellectual summit Jean Piaget called *formal operations*, they apply their new abstract reasoning tools to the world around them. They may think about what is ideally possible and compare that with the imperfect reality of their society, their parents, and even themselves. They may debate human nature, good and evil, truth and justice. Their sense of what's fair changes from simple equality to equity—to what's proportional to merit (Almås et al., 2010). Having left behind the concrete images of early childhood, they may now seek a deeper conception of God and existence (Elkind, 1970; Worthington, 1989). Reasoning hypothetically and deducing consequences also enables adolescents to detect inconsistencies and spot hypocrisy in others' reasoning. This can lead to heated debates with parents and silent vows never to lose sight of their own ideals (Peterson et al., 1986).

SHANNON STAPLETON/REUTERS/Newscom

LARRY DOWNING/REUTERS/ Newscom

Demonstrating their reasoning ability Although they supported different candidates in the 2012 U.S. presidential election, these teens were all demonstrating their ability to think logically about abstract topics. According to Piaget, they were in the final cognitive stage, formal operations.

Developing Morality

Two crucial tasks of childhood and adolescence are discerning right from wrong and developing character—the psychological muscles for controlling impulses. To be a moral person is to *think* morally and *act* accordingly. Jean Piaget and Lawrence Kohlberg proposed that moral reasoning guides moral actions. A newer view builds on psychology's game-changing new recognition that much of our functioning occurs not on the "high road" of deliberate, conscious thinking but on the "low road" of unconscious, automatic thinking.

MORAL REASONING

Piaget (1932) believed that children's moral judgments build on their cognitive development. Agreeing with Piaget, Lawrence Kohlberg (1981, 1984) sought to describe the development of *moral reasoning*, the thinking that occurs as we consider right and wrong. Kohlberg posed moral dilemmas (for example, whether a person should steal medicine to save a loved one's life) and asked children, adolescents, and adults whether the action was right or wrong. He then analyzed their answers for evidence of stages of moral thinking. His findings led him to propose three basic levels of moral thinking: preconventional, conventional, and postconventional (**TABLE 51.1** on the next page).

Moral reasoning Some Staten Island, New York, residents faced a moral dilemma in 2012 when Superstorm Sandy caused disastrous flooding. Should they risk their lives to try to rescue family, friends, and neighbors in dangerously flooded areas?

ADAM HUNGER/Reuters/Landov

AP® Exam Tip

Kohlberg's is an important stage theory. There are often AP® exam questions on this topic. It's very important to understand that the stage you're in doesn't depend on *what* you decide to do (for example, steal the medicine), it depends on *why* you decide to do it.

Table 51.1 Kohlberg's Levels of Moral Thinking

Level (approximate age)	Focus	Example
Preconventional morality (before age 9)	Self-interest; obey rules to avoid punishment or gain concrete rewards.	"If you save your wife, you'll be a hero."
Conventional morality (early adolescence)	Uphold laws and rules to gain social approval or maintain social order.	"If you steal the drug, everyone will think you're a criminal."
Postconventional morality (adolescence and beyond)	Actions reflect belief in basic rights and self-defined ethical principles.	"People have a right to live."

Kohlberg claimed these levels form a moral ladder. As with all stage theories, the sequence is unvarying. We begin on the bottom rung and ascend to varying heights. Kohlberg's critics have noted that his postconventional stage is culturally limited, appearing mostly among people who prize individualism (Eckensberger, 1994; Miller & Bersoff, 1995).

Moral Intuition

Psychologist Jonathan Haidt (2002, 2006, 2010) believes that much of our morality is rooted in *moral intuitions*—"quick gut feelings, or affectively laden intuitions." According to this intuitionist view, the mind makes moral judgments as it makes aesthetic judgments—quickly and automatically. We *feel* disgust when seeing people engaged in degrading or subhuman acts. Even a disgusting taste in the mouth heightens people's disgust over various moral digressions (Eskine et al., 2011). We *feel* elevation—a tingly, warm, glowing feeling in the chest—when seeing people display exceptional generosity, compassion, or courage. These feelings in turn trigger moral reasoning, says Haidt.

One woman recalled driving through her snowy neighborhood with three young men as they passed "an elderly woman with a shovel in her driveway. I did not think much of it, when one of the guys in the back asked the driver to let him off there. . . . When I saw him jump out of the back seat and approach the lady, my mouth dropped in shock as I realized that he was offering to shovel her walk for her." Witnessing this unexpected goodness triggered elevation: "I felt like jumping out of the car and hugging this guy. I felt like singing and running, or skipping and laughing. I felt like saying nice things about people" (Haidt, 2000).

"Could human morality really be run by the moral emotions," Haidt wonders, "while moral reasoning struts about pretending to be in control?" Consider the desire to punish. Laboratory games reveal that the desire to punish wrongdoings is mostly driven not by reason (such as an objective calculation that punishment deters crime) but rather by emotional reactions, such as moral outrage (Darley, 2009). After the emotional fact, moral reasoning—our mind's press secretary—aims to convince us and others of the logic of what we have intuitively felt.

This intuitionist perspective on morality finds support in a study of moral paradoxes. Imagine seeing a runaway trolley headed for five people. All will certainly be killed unless you throw a switch that diverts the trolley onto another track, where it will kill one person. Should you throw the switch? Most say *Yes.* Kill one, save five.

Now imagine the same dilemma, except that your opportunity to save the five requires you to push a large stranger onto the tracks, where he will die as his body stops the trolley. Kill one, save five? The logic is the same, but most say *No.* Seeking to understand why, a Princeton research team led by Joshua Greene (2001) used brain imaging to spy on people's neural responses as they contemplated such dilemmas. Only when given the body-pushing type of moral dilemma did their brain's emotion areas activate. Despite the identical logic, the personal dilemma engaged emotions that altered moral judgment.

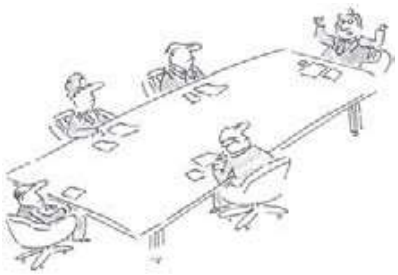
While the new moral psychology illustrates the many ways moral intuitions trump moral reasoning, others reaffirm the importance of moral reasoning. The religious and moral reasoning of the Amish, for example, shapes their practices of forgiveness, communal life, and modesty (Narvaez, 2010). Joshua Greene (2010) likens our moral cognition to a camera. Usually, we rely on the automatic point-and-shoot. But sometimes we use reason to manually override the camera's automatic impulse.

"It is a delightful harmony when doing and saying go together."
-Michel Eyquem de Montaigne (1533–1592)

MORAL ACTION

Our moral thinking and feeling surely affect our moral talk. But sometimes talk is cheap and emotions are fleeting. Morality involves *doing* the right thing, and what we do also depends on social influences. As political theorist Hannah Arendt (1963) observed, many Nazi concentration camp guards during World War II were ordinary "moral" people who were corrupted by a powerfully evil situation.

Today's character education programs tend to focus on the whole moral package—thinking, feeling, and *doing* the right thing. As children's *thinking* matures, their *behavior* also becomes less selfish and more caring (Krebs & Van Hesteren, 1994; Miller et al., 1996). Today's programs also teach children *empathy* for others' feelings, and the self-discipline needed to restrain one's own impulses—to delay small gratifications now to enable bigger rewards later. Those who do learn to *delay gratification* become more socially responsible, academically successful, and productive (Funder & Block, 1989; Mischel et al., 1988, 1989). In service-learning programs, teens tutor, clean up their neighborhoods, and assist the elderly. The result? The teens' sense of competence and desire to serve increase, and their school absenteeism and drop-out rates diminish (Andersen, 1998; Piliavin, 2003). Moral action feeds moral attitudes.



"This might not be ethical. Is that a problem for anybody?"

Before You Move On

► ASK YOURSELF

Can you recall making an impulsive decision when you were younger that you later regretted? Would you approach the situation differently today?

► TEST YOURSELF

Describe Kohlberg's three levels of moral reasoning.

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 51 Review

51-1 How is *adolescence* defined, and what physical changes mark this period?

- *Adolescence* is the transition period from childhood to adulthood, extending from puberty to social independence.
- For boys, early maturation has mixed effects; for girls, early maturation can be a challenge.
- The brain's frontal lobes mature and myelin growth increases during adolescence and the early twenties, enabling improved judgment, impulse control, and long-term planning.

51-2 How did Piaget, Kohlberg, and later researchers describe adolescent cognitive and moral development?

- Piaget theorized that adolescents develop a capacity for formal operations and that this development is the foundation for moral judgment.
- Lawrence Kohlberg proposed a stage theory of moral reasoning, from a preconventional morality of self-interest, to a conventional morality concerned with upholding laws and social rules, to (in some people) a postconventional morality of universal ethical principles.

- Other researchers believe that morality lies in moral intuition and moral action as well as thinking.
- Some critics argue that Kohlberg's postconventional level represents morality from the perspective of individualist cultures.

Multiple-Choice Questions

1. The growth of _____ around axons speeds neurotransmission, enabling better communication between the frontal lobe and other brain regions.

a. neurons
b. the cell body
c. dendrites
d. myelin
e. synapses

2. The maturation of the brain's _____ lags behind the development of the limbic system, which may explain the impulsivity of teenagers compared with adults.

a. frontal lobes
b. temporal lobes
c. occipital lobes
d. parietal lobes
e. corpus collosum

3. _____ believed that a child's moral judgments build on cognitive development. _____ agreed and sought to describe the development of moral reasoning.

a. Kohlberg; Erikson
b. Erikson; Kohlberg
c. Piaget; Kohlberg
d. Piaget; Erikson
e. Haidt; Hall

4. Which level of moral reasoning includes a focus on upholding laws in order to gain social approval?

a. Collectivist
b. Preconventional
c. Conventional
d. Postconventional
e. Formal operational

5. What development in adolescents allows for greater impulse control?

a. The hormonal surge of early adolescence
b. Hindbrain changes associated with the onset of puberty
c. Frontal lobe maturation in late adolescence
d. Limbic system development in mid-adolescence
e. A decrease in myelin production throughout adolescence

6. Which of Jean Piaget's stages describes typical adolescent thinking?

a. Sensorimotor
b. Preoperational
c. Concrete operational
d. Formal operational
e. Accommodation

7. Which of the following correctly describes one of Kohlberg's levels of moral reasoning?

a. Preconventional stage, where one follows moral principles
b. Conventional stage, where individualism is foremost
c. Conventional stage, where it is imperative to uphold the law and follow rules
d. Preconventional stage, where moral judgment depends on rewards and punishments
e. Postconventional stage, where it is imperative to uphold the law and follow rules

Practice FRQs

1. Describe how the ideas of Lawrence Kohlberg and Jonathan Haidt differ in regard to the development of morality.

Answer

1 point: Lawrence Kohlberg focused on moral reasoning and the way people *think* about moral situations.

1 point: Jonathan Haidt focused on moral intuition and the way people *feel* about moral situations.

2. Name two biological changes related to sexual maturity in adolescence and briefly describe one change in neurological development in adolescence.

(3 points)

Module 52

Adolescence: Social Development and Emerging Adulthood


Wolfy/Alamy

Module Learning Objectives

- **52-1** Describe the social tasks and challenges of adolescence.
- **52-2** Contrast parental and peer influences during adolescence.
- **52-3** Discuss the characteristics of emerging adulthood.

52-1 What are the social tasks and challenges of adolescence?

Theorist Erik Erikson (1963) contended that each stage of life has its own *psychosocial* task, a crisis that needs resolution. Young children wrestle with issues of *trust,* then *autonomy* (independence), then *initiative.* School-age children strive for *competence,* feeling able and productive. But for people your age, the task is to synthesize past, present, and future possibilities into a clearer sense of self (**TABLE 52.1** on the next page). Adolescents wonder, "Who am I as an individual? What do I want to do with my life? What values should I live by? What do I believe in?" Erikson called this quest the adolescent's *search for identity.*

As sometimes happens in psychology, Erikson's interests were bred by his own life experience. As the son of a Jewish mother and a Danish Gentile father, Erikson was "doubly an outsider," reported Morton Hunt (1993, p. 391). He was "scorned as a Jew in school but mocked as a Gentile in the synagogue because of his blond hair and blue eyes." Such episodes fueled his interest in the adolescent struggle for identity.

"Somewhere between the ages of 10 and 13 (depending on how hormone-enhanced their beef was), children entered adolescence, a.k.a. 'the de-cutening.'" -Jon Stewart et al., *Earth (The Book)*, 2010

AP® Exam Tip

This is not the only place in the book that the author discusses Erik Erikson's stage theory. For example, trust was discussed on page 492. Integrity comes up on page 548. Table 52.1 pulls it all together in one place for you.

Forming an Identity

To refine their sense of identity, adolescents in individualist cultures usually try out different "selves" in different situations. They may act out one self at home, another with friends, and still another at school or on Facebook. If two situations overlap—as when a teenager brings friends home—the discomfort can be considerable. The teen asks, "Which self should I be? Which is the real me?" The resolution is a self-definition that unifies the various selves into a consistent and comfortable sense of who one is—an **identity.**

For both adolescents and adults, group identities are often formed by how we differ from those around us. When living in Britain, I become conscious of my Americanness. When spending time with my daughter in Africa, I become conscious of my minority (White) race. When surrounded by women, I am mindful of my gender identity. For international students, for those of a minority ethnic group, for people with a disability, for those on a team, a **social identity** often forms around their distinctiveness.

identity our sense of self; according to Erikson, the adolescent's task is to solidify a sense of self by testing and integrating various roles.

social identity the "we" aspect of our self-concept; the part of our answer to "Who am I?" that comes from our group memberships.

Competence vs. inferiority

Intimacy vs. isolation

Table 52.1 Erikson's Stages of Psychosocial Development

Stage (approximate age)	Issue	Description of Task
Infancy (to 1 year)	Trust vs. mistrust	If needs are dependably met, infants develop a sense of basic trust.
Toddlerhood (1 to 3 years)	Autonomy vs. shame and doubt	Toddlers learn to exercise their will and do things for themselves, or they doubt their abilities.
Preschool (3 to 6 years)	Initiative vs. guilt	Preschoolers learn to initiate tasks and carry out plans, or they feel guilty about their efforts to be independent.
Elementary school (6 years to puberty)	Competence vs. inferiority	Children learn the pleasure of applying themselves to tasks, or they feel inferior.
Adolescence (teen years into 20s)	Identity vs. role confusion	Teenagers work at refining a sense of self by testing roles and then integrating them to form a single identity, or they become confused about who they are.
Young adulthood (20s to early 40s)	Intimacy vs. isolation	Young adults struggle to form close relationships and to gain the capacity for intimate love, or they feel socially isolated.
Middle adulthood (40s to 60s)	Generativity vs. stagnation	In middle age, people discover a sense of contributing to the world, usually through family and work, or they may feel a lack of purpose.
Late adulthood (late 60s and up)	Integrity vs. despair	Reflecting on his or her life, an older adult may feel a sense of satisfaction or failure.

"Self-consciousness, the recognition of a creature by itself as a 'self,' [cannot] exist except in contrast with an 'other,' a something which is not the self."
-C. S. Lewis, *The Problem of Pain*, 1940

But not always. Erikson noticed that some adolescents forge their identity early, simply by adopting their parents' values and expectations. (Traditional, less individualist cultures teach adolescents who they are, rather than encouraging them to decide on their own.) Other adolescents may adopt an identity defined in opposition to parents but in conformity with a particular peer group—jocks, preps, geeks, band kids, debaters.

Most young people do develop a sense of contentment with their lives. When American teens were asked whether a series of statements described them, 81 percent said *Yes* to "I would choose my life the way it is right now." The other 19 percent agreed that "I wish I were somebody else" (Lyons, 2004). Reflecting on their existence, 75 percent of American collegians say they "discuss religion/spirituality" with friends, "pray," and agree that "we are all spiritual beings" and "search for meaning/purpose in life" (Astin et al., 2004; Bryant & Astin, 2008). This would not surprise Stanford psychologist William Damon and his colleagues (2003), who have contended that a key task of adolescence is to achieve a purpose—a desire to accomplish something personally meaningful that makes a difference to the world beyond oneself.

The late teen years, when many people like you in industrialized countries begin attending college or working full time, provide new opportunities for trying out possible roles. Here is something for you to remember: Many college seniors have achieved a clearer identity and a more positive self-concept than they had as first-year students (Waterman, 1988).


Tristan Savatier/Getty Images


Wiklund, Juliana/Getty Images

Who shall I be today? By varying the way they look, adolescents try out different "selves." Although we eventually form a consistent and stable sense of identity, the self we present may change with the situation.

This could be one of the reasons why the first year of college is such a challenge. Collegians who have achieved a clear sense of identity are less prone to self-destructive behavior such as alcohol misuse (Bishop et al., 2005).

Several nationwide studies indicate that young Americans' self-esteem falls during the early to midteen years, and, for girls, depression scores often increase. But then self-image rebounds during the late teens and twenties (Robins et al., 2002; Twenge & Campbell, 2001; Twenge & Nolen-Hoeksema, 2002). Late adolescence and early adulthood are also when agreeableness and emotional stability scores increase (Klimstra et al., 2009; Lucas and Donnellan, 2011).

Erikson contended that the adolescent identity stage is followed in young adulthood by a developing capacity for **intimacy,** the ability to form emotionally close relationships. Romantic relationships, which tend to be emotionally intense, are reported by some two in three North American 17-year-olds, but fewer among those in collectivist countries such as China (Collins et al., 2009; Li et al., 2010). Those who enjoy high-quality (intimate, supportive) relationships with family and friends tend also to enjoy similarly high-quality romantic relationships in adolescence, which set the stage for healthy adult relationships. Such relationships are, for most of us, a source of great pleasure. When Mihaly Csikszentmihalyi [chick-SENT-me-hi] and Jeremy Hunter (2003) used a beeper to sample the daily experiences of American teens, they found them unhappiest when alone and happiest when with friends. As Aristotle long ago recognized, we humans are "the social animal." Relationships matter.

intimacy in Erikson's theory, the ability to form close, loving relationships; a primary developmental task in late adolescence and early adulthood.

AP® Exam Tip

Careful! In the media, to describe a relationship as intimate usually implies that it is sexual. Erikson means something different. In his theory, an intimate relationship may or may not be sexual (and a sexual relationship may or may not be intimate).

Parent and Peer Relationships

52-2 How do parents and peers influence adolescents?

This next research finding will not surprise you: As adolescents in Western cultures seek to form their own identities, they begin to pull away from their parents (Shanahan et al., 2007). The preschooler who can't be close enough to her mother, who loves to touch and cling to her, becomes the 14-year-old who wouldn't be caught dead holding hands with Mom. The transition occurs gradually. By adolescence, arguments occur more often, usually over mundane things—household chores, bedtime, homework (Tesser et al., 1989). Parent-child conflict during the transition to adolescence tends to be greater with first-born than with second-born children, and greater with mothers than with fathers (Burk et al., 2009; Shanahan et al., 2007).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"She says she's someone from your past who gave birth to you, and raised you, and sacrificed everything so you could have whatever you wanted."

"I love u guys." -Emily Keyes' final text message to her parents before dying in a Colorado school shooting, 2006

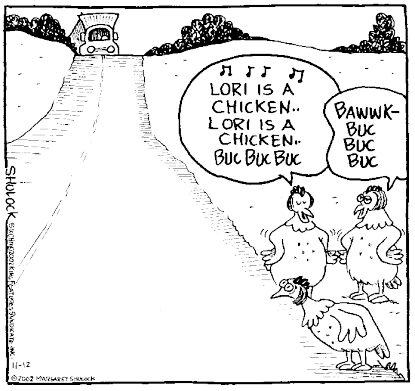
For a minority of parents and their adolescents, differences lead to real splits and great stress (Steinberg & Morris, 2001). But most disagreements are at the level of harmless bickering. And most adolescents—6000 of them in 10 countries, from Australia to Bangladesh to Turkey—said they like their parents (Offer et al., 1988). "We usually get along but . . . ," adolescents often reported (Galambos, 1992; Steinberg, 1987).

Positive parent-teen relations and positive peer relations often go hand in hand. High school girls who have the most affectionate relationships with their mothers tend also to enjoy the most intimate friendships with girlfriends (Gold & Yanof, 1985). And teens who feel close to their parents tend to be healthy and happy and to do well in school (Resnick et al., 1997). Of course, we can state this correlation the other way: Misbehaving teens are more likely have tense relationships with parents and other adults.

"It's you who don't understand me—I've been fifteen, but you have never been forty-eight."

Adolescence is typically a time of diminishing parental influence and growing peer influence. Asked in a survey if they had "ever had a serious talk" with their child about illegal drugs, 85 percent of American parents answered *Yes.* But if the parents had indeed given this earnest advice, many teens had apparently tuned it out: Only 45 percent could recall such a talk (Morin & Brossard, 1997).

Heredity does much of the heavy lifting in forming individual temperament and personality differences, and peer influences do much of the rest. Most teens are herd animals. They talk, dress, and act more like their peers than their parents. What their friends are, they often become, and what "everybody's doing," they often do. In teen calls to hotline counseling services, peer relationships have been the most discussed topic (Boehm et al., 1999). The average U.S. teen sends 60 text messages per day (Pew, 2012). Many adolescents become absorbed by social networking, sometimes with a compulsive use that produces "Facebook fatigue." Online communication stimulates intimate self-disclosure—both for better (support groups) and for worse (online predators and extremist groups) (Subrahmanyam & Greenfield, 2008; Valkenburg & Peter, 2009).



Nine times out of ten, it's all about peer pressure.

For those who feel excluded, the pain is acute. "The social atmosphere in most high schools is poisonously clique-driven and exclusionary," observed social psychologist Elliot Aronson (2001). Most excluded "students suffer in silence. . . . A small number act out in violent ways against their classmates." Those who withdraw are vulnerable to loneliness, low self-esteem, and depression (Steinberg & Morris, 2001). Peer approval matters.

Teens see their parents as having more influence in other areas—for example, in shaping their religious faith and in thinking about college and career choices (*Emerging Trends,* 1997). A Gallup Youth Survey reveals that most share their parents' political views (Lyons, 2005).

Emerging Adulthood

52-3 What is emerging adulthood?

In the Western world, adolescence now roughly corresponds to the teen years. At earlier times, and in other parts of the world today, this slice of life has been much smaller (Baumeister & Tice, 1986). Shortly after sexual maturity, young people would assume adult responsibilities and status. The event might be celebrated with an elaborate initiation—a public *rite of passage.* The new adult would then work, marry, and have children.

When schooling became compulsory in many Western countries, independence was put on hold until after graduation. From Europe to Australia, adolescents are now taking more time to establish themselves as adults. In the United States, for example, the average age at first marriage has increased more than 4 years since 1960 (to 28 for men, 26 for women). In 1960, 3 in 4 women and 2 in 3 men had, by age 30, finished school, left home, become financially independent, married, and had a child. Today, fewer than half of 30-year-old women and one-third of men have achieved these five milestones (Henig, 2010). Delayed independence has overlapped with an earlier onset of puberty. Earlier sexual maturity is related both to girls' increased body fat (which can support pregnancy and nursing) and to weakened parent-child bonds, including absent fathers (Ellis, 2004).

"When I was your age, I was an adult."

Together, later independence and earlier sexual maturity have widened the once-brief interlude between biological maturity and social independence (**FIGURE 52.1**). In prosperous communities, the time from 18 to the mid-twenties is an increasingly not-yet-settled phase of life, which some now call **emerging adulthood** (Arnett, 2006, 2007; Reitzle, 2006). No longer adolescents, these emerging adults, having not yet assumed full adult responsibilities and independence, feel "in between." After high school, those who enter the job market or go to college may be managing their own time and priorities more than ever before. Yet they may be doing so from their parents' home—unable to afford their own place and perhaps still emotionally dependent as well. Recognizing today's more gradually emerging adulthood, the U.S. government now allows dependent children up to age 26 to remain on their parents' health insurance (Cohen, 2010).

emerging adulthood for some people in modern cultures, a period from the late teens to mid-twenties, bridging the gap between adolescent dependence and full independence and responsible adulthood.

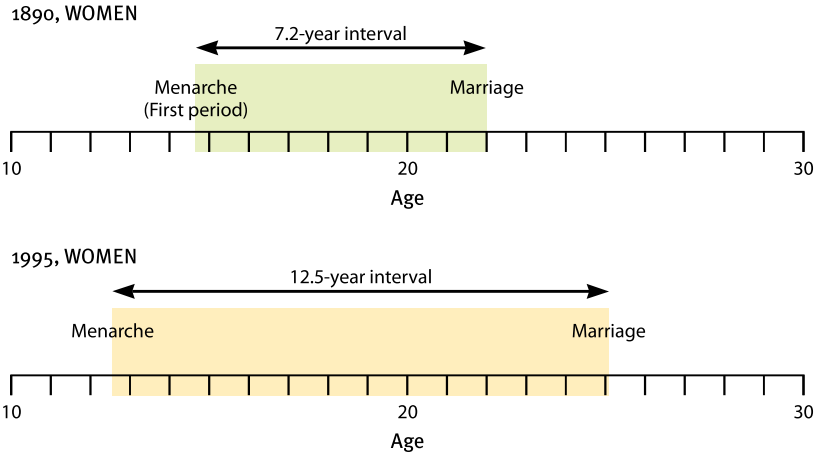


Figure 52.1

The transition to adulthood is being stretched from both ends In the 1890s, the average interval between a woman's first menstrual period and marriage, which typically marked a transition to adulthood, was about 7 years; in industrialized countries today it is about 12 years (Guttmacher, 1994, 2000). Although many adults are unmarried, later marriage combines with prolonged education and earlier menarche to help stretch out the transition to adulthood.

Before You Move On

▶ ASK YOURSELF

What have been your best and worst experiences during adolescence? How have your experiences been influenced by environmental factors, such as your cultural context, and how have they been influenced by your inborn traits?

▶ TEST YOURSELF

How has the transition from childhood to adulthood changed in Western cultures in the last century or so?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 52 Review

52-1 What are the social tasks and challenges of adolescence?

- Erikson theorized that each life stage has its own psychosocial task, and that a chief task of adolescence is solidifying one's sense of self—one's *identity.* This often means "trying on" a number of different roles.
- *Social identity* is the part of the self-concept that comes from a person's group memberships.

52-2 How do parents and peers influence adolescents?

- During adolescence, parental influence diminishes and peer influence increases.
- Adolescents adopt their peers' ways of dressing, acting, and communicating.
- Parents have more influence in religion, politics, and college and career choices.

52-3 What is emerging adulthood?

- The transition from adolescence to adulthood is now taking longer.
- *Emerging adulthood* is the period from age 18 to the mid-twenties, when many young people are not yet fully independent. But critics note that this stage is found mostly in today's Western cultures.

Multiple-Choice Questions

1. According to Erikson, you develop your _____, a part of who you are, from your group memberships.
   a. self-interest
   b. social identity
   c. social self
   d. self-esteem
   e. self-consciousness

2. In many Western societies, it is common for adolescents to graduate high school, go to college, and still live at home with their parents. They have not yet assumed full adult responsibilities and independence. Psychologists have identified this period of time as
   a. adulthood.
   b. early adulthood.
   c. emerging adulthood.
   d. late adolescence.
   e. role confusion.

3. Which is true of social relations during the teen years?
   a. As teens distance themselves from parents, peer relationships become more important.
   b. High school girls who have the poorest relationships with their mothers have the most intense friendships with peers.
   c. Parental influence peaks during mid to late adolescence.
   d. Most adolescents have serious disagreements with parents, leading to great social stress.
   e. Teens are generally more concerned with family relationships than peer relationships.

4. According to Erikson, what is the primary developmental task for adolescents?
   a. Trust versus mistrust
   b. Initiative versus guilt
   c. Competence versus inferiority
   d. Identity versus role confusion
   e. Intimacy versus isolation

5. Compared with the late nineteenth century, what is true about the transition from childhood to adulthood in Western cultures?

a. It starts earlier and is completed earlier.
b. It starts later and is completed later.
c. It starts later and is completed earlier.
d. It starts earlier and is completed later.
e. It has not changed.

6. Megan, a third grader, is having trouble with math. She is starting to do poorly in other subjects, because she feels she cannot master math. Based on Erikson's stages of psychosocial development, which stage is Megan in?

a. Autonomy versus shame and doubt
b. Initiative versus guilt
c. Competence versus inferiority
d. Identity versus role confusion
e. Intimacy versus isolation

7. Boez is a 2-year-old boy who is in the process of potty training. When Boez urinates in the potty, he has a sense of pride. If Boez urinates in his pants, he runs and hides. According to Erikson, in which psychosocial stage is Boez?

a. Autonomy versus shame and doubt
b. Initiative versus guilt
c. Competence versus inferiority
d. Identity versus role confusion
e. Intimacy versus isolation

Practice FRQs

1. What is emerging adulthood? Name two trends that have led to adding this to the stages of life.

Answer

1 point: Emerging adulthood is the period in modern Western cultures during the late teens to the mid-twenties that bridges the gap between adolescent dependence and adult independence.

2 points: Longer years of schooling and later age of marriage and moving out of the family home are the trends that have led to this new stage.

2. Name and describe Erik Erikson's stages of psychosocial development for infancy (first year) and middle adulthood (40s to 60s).

(4 points)

Module 53

Sexual Development

Image Source/Getty Images

Module Learning Objectives

- **53-1** Explain how biological sex is determined, and describe the role of sex hormones in gender development.
- **53-2** Describe some of the ways that sexual development varies.
- **53-3** Discuss the factors that reduce the risk of sexually transmitted infections.
- **53-4** Discuss the factors that influence teenagers' sexual behaviors and use of contraceptives.
- **53-5** Summarize what research has taught us about sexual orientation.

53-1 How is our biological sex determined, and how do sex hormones influence prenatal and adolescent development?

In domains where we face similar challenges—regulating heat with sweat, preferring foods that nourish, growing calluses where the skin meets friction—men and women are similar. Even when describing the ideal mate, both prize traits such as "kind," "honest," and "intelligent." But in mating-related domains, evolutionary psychologists contend, males differ from females whether they are elephants or elephant seals, rural peasants or corporate presidents (Geary, 2010). Our biology may influence our gender differences in two ways: genetically, by our differing *sex chromosomes,* and physiologically, from our differing concentrations of *sex hormones.*

X chromosome the sex chromosome found in both men and women. Females have two X chromosomes; males have one. An X chromosome from each parent produces a female child.

Y chromosome the sex chromosome found only in males. When paired with an X chromosome from the mother, it produces a male child.

testosterone the most important of the male sex hormones. Both males and females have it, but the additional testosterone in males stimulates the growth of the male sex organs in the fetus and the development of the male sex characteristics during puberty.

Prenatal Sexual Development

As noted earlier, males and females are variations on a single form—of the 46 chromosomes, 45 are unisex. So great is this similarity that until seven weeks after conception, you were anatomically indistinguishable from someone of the other sex. Then your genes activated your biological sex. Male or female, your sex was determined by your father's contribution to your twenty-third pair of chromosomes, the two sex chromosomes. You received an **X chromosome** from your mother. From your father, you received the one chromosome that is not unisex—either another X chromosome, making you a girl, or a **Y chromosome,** making you a boy.

The Y chromosome includes a single gene which, about seven weeks after conception, throws a master switch triggering the testes to develop and to produce the principal male hormone, **testosterone.** This hormone starts the development of male sex organs. Females also have testosterone, but less of it.

Another key period for sexual differentiation falls during the fourth and fifth prenatal months. During this period, sex hormones bathe the fetal brain and influence its wiring. Different patterns for males and females develop under the influence of the male's greater testosterone and the female's ovarian hormones (Hines, 2004; Udry, 2000).

Nick Downes.

Adolescent Sexual Development

Pronounced physical differences emerge during adolescence, when boys and girls enter **puberty** and mature sexually. A surge of hormones triggers a two-year period of rapid physical development, usually beginning at about age 11 in girls and at about age 13 in boys. A year or two before that, however, boys and girls often feel the first stirrings of physical attraction (McClintock & Herdt, 1996).

About the time of puberty, boys' growth propels them to greater height than their female counterparts (**FIGURE 53.1**). During this growth spurt, the **primary sex characteristics**—the reproductive organs and external genitalia—develop dramatically. So do **secondary sex characteristics,** the nonreproductive traits such as breasts and hips in girls, facial hair and deepened voice in boys, and pubic and underarm hair in both sexes (**FIGURE 53.2** on the next page).

In various countries, girls are developing breasts earlier (sometimes before age 10) and reaching puberty earlier than in the past. This phenomenon is variously attributed to increased body fat, increased hormone-mimicking chemicals, and increased stress related to family disruption (Biro et al., 2010).

Puberty's landmarks are the first ejaculation in boys *(spermarche),* usually by about age 14, and the first menstrual period in girls (**menarche**—meh-NAR-key), usually within a year of age 12½ (Anderson et al., 2003). Menarche appears to occur a few months earlier, on average, for girls who have experienced stresses related to father absence, sexual abuse, or insecure attachments (Belsky et al., 2010; Vigil et al., 2005; Zabin et al., 2005). Girls who have

puberty the period of sexual maturation, during which a person becomes capable of reproducing.

primary sex characteristics the body structures (ovaries, testes, and external genitalia) that make sexual reproduction possible.

secondary sex characteristics nonreproductive sexual traits, such as female breasts and hips, male voice quality, and body hair.

menarche [meh-NAR-key] the first menstrual period.

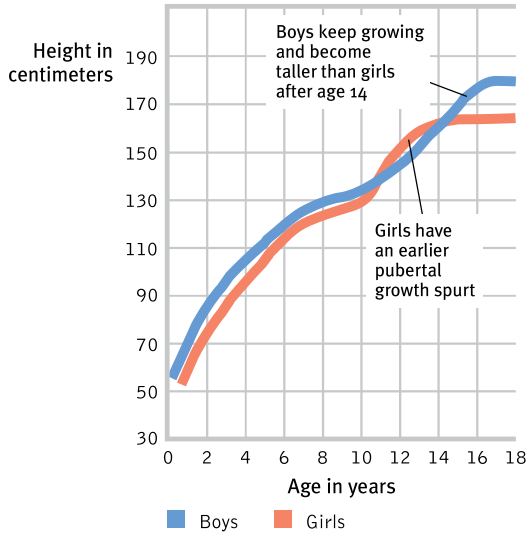


Figure 53.1

Height differences Throughout childhood, boys and girls are similar in height. At puberty, girls surge ahead briefly, but then boys overtake them at about age 14. (Data from Tanner, 1978.) Studies suggest that sexual development and growth spurts are beginning somewhat earlier than was the case a half-century ago (Herman-Giddens et al., 2001).


Rob Lewine/Getty Images

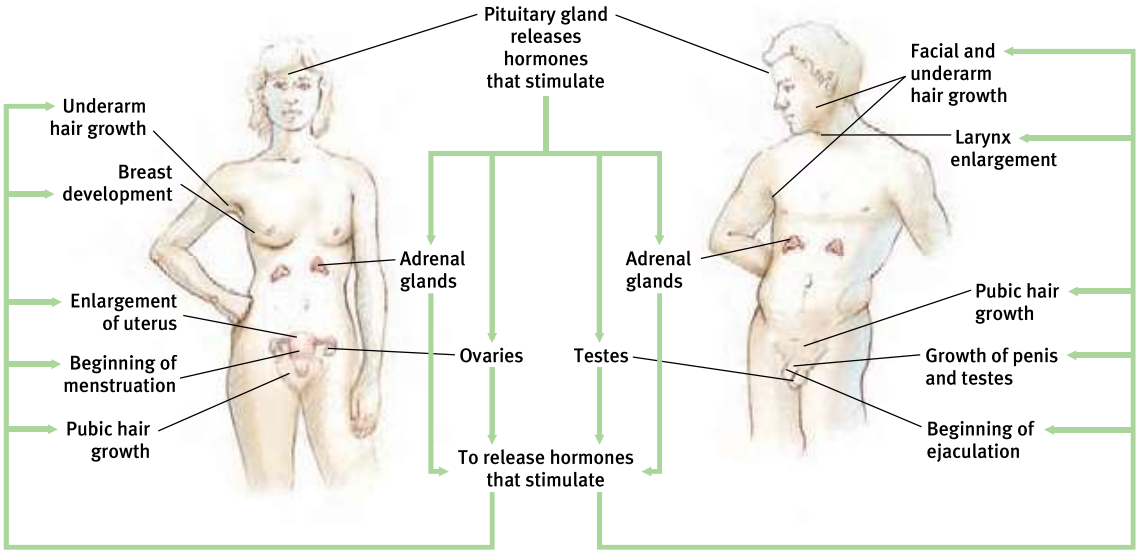


Figure 53.2
Body changes at puberty At about age 11 in girls and age 13 in boys, a surge of hormones triggers a variety of physical changes.

been prepared for menarche usually experience it as a positive life transition. Studies have shown that nearly all adult women recall their first menstrual period and remember experiencing a mixture of feelings—pride, excitement, embarrassment, and apprehension (Greif & Ulman, 1982; Woods et al., 1983). Most men have similarly recalled their first ejaculation, which usually occurs as a nocturnal emission (Fuller & Downs, 1990).

Variations on Sexual Development

53-2 What are some of the ways that sexual development varies?

Sometimes nature blurs the biological line between males and females. Atypical hormone exposure or sensitivity may cause atypical fetal development. *Intersex* individuals are born with intermediate or unusual combinations of male and female physical features. Genetic males, for example, may be born with normal male hormones and testes but without a penis or with a very small one.

Until recently, pediatricians and other medical experts often recommended surgery to create a female identity for these children. One study reviewed 14 cases of boys who had undergone early sex-reassignment surgery and had been raised as girls. Of those cases, 6 had later declared themselves as males, 5 were living as females, and 3 had an unclear gender identity (Reiner & Gearhart, 2004).

Although not born with an intersex condition, a little boy who lost his penis during a botched circumcision became a famous case illustrating the problems involved in sex-reassignment surgery. His parents followed a psychiatrist's advice to raise him as a girl rather than as a damaged boy. Alas, "Brenda" Reimer was not like most other girls. "She" didn't like dolls. She tore her dresses with rough-and-tumble play. At puberty she wanted no part of kissing boys. Finally, Brenda's parents explained what had happened, whereupon "Brenda" immediately rejected the assigned female identity. He cut his hair and chose a male name, David. He eventually married a woman and became a stepfather. And, sadly, he later committed suicide (Colapinto, 2000).

The bottom line: "Sex matters," concluded the National Academy of Sciences (2001). In combination with the environment, sex-related genes and physiology "result in behavioral and cognitive differences between males and females." Nature and nurture work together.

Gender in the spotlight Dramatic improvements in South African track star Caster Semenya's race times prompted the International Association of Athletics Federations to undertake sex testing in 2009. Semenya was reported to be intersex—with physical characteristics of both males and females—though she was officially cleared to continue competing as a woman. Semenya declared, "God made me the way I am and I accept myself. I am who I am" (*YOU*, 10 September 2009).

Cameron Spencer/Getty Images

Sexually Transmitted Infections

53-3 How can sexually transmitted infections be prevented?

Rates of *sexually transmitted infections* (*STIs;* also called *STDs* for *sexually transmitted diseases*) are rising, and two-thirds of the new infections have occurred in people under 25 (CASA, 2004). Teenage girls, because of their not yet fully mature biological development and lower levels of protective antibodies, are especially vulnerable (Dehne & Riedner, 2005; Guttmacher, 1994). A Centers for Disease Control study of sexually experienced 14- to 19-year-old U.S. females found 39.5 percent had STIs (Forhan et al., 2008).

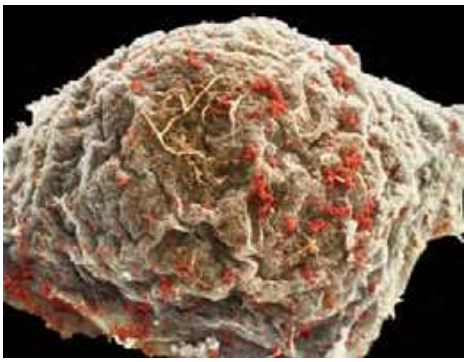
Consider this: If someone uses a birth control method that is 98 percent effective in preventing pregnancy or infection, a 2 percent chance of failure in the first such use accumulates to a risk of nearly 50 percent after 30 such uses. Moreover, when people feel drawn to a partner, they become motivated to underestimate risks (Knäuper et al, 2005).

Condoms offer only limited protection against certain skin-to-skin STIs, such as herpes, but they do reduce other risks (Medical Institute, 1994; NIH, 2001). The effects were clear when Thailand promoted 100 percent condom use by commercial sex workers. Over a 4-year period, as condom use soared from 14 to 94 percent, the annual number of bacterial STIs plummeted from 410,406 to 27,362 (WHO, 2000).

Across the available studies, condoms also have been 80 percent effective in preventing transmission of *HIV* (*human immunodeficiency virus*—the virus that causes **AIDS**) from an infected partner (Weller & Davis-Beaty, 2002; WHO, 2003). Although AIDS can be transmitted by other means, such as needle sharing during drug use, its sexual transmission is most common. Women's AIDS rates are increasing fastest, partly because the virus is passed from man to woman much more often than from woman to man. A man's semen can carry more of the virus than can a woman's vaginal and cervical secretions. The HIV-infected semen can also linger for days in a woman's vagina and cervix, increasing the time of exposure (Allen & Setlow, 1991; WHO, 2004).

AIDS (acquired immune deficiency syndrome) a life-threatening, sexually transmitted infection caused by the *human immunodeficiency virus* (HIV). AIDS depletes the immune system, leaving the person vulnerable to infections.

Most people recently diagnosed with AIDS in the United States have been ages 25 to 44 (CDC, 2013a). Given AIDS' long incubation period, it's unsurprising that 39 percent of new HIV diagnoses in the United States were among those even younger—13- to 29-year-olds (CDC, 2013b). In 2009, the death of 1.8 million people with AIDS worldwide left behind countless grief-stricken partners and millions of orphaned children (UNAIDS, 2010). Sub-Saharan Africa is home to two-thirds of those infected with HIV, and medical treatment and care for the dying are sapping the region's social resources.



Thomas Deerinck, NCMIR/Science Source

An HIV-infected cell

Many people assume that oral sex falls in the category of "safe sex," but recent studies show a significant link between oral sex and transmission of STIs, such as the *human papilloma virus (HPV).* Risks rise with the number of sexual partners (Gillison et al., 2012). Most HPV infections can now be prevented with a vaccination administered before sexual contact.

Teen Pregnancy

53-4 What factors influence teenagers' sexual behaviors and use of contraceptives?

Adolescents' physical maturation fosters a sexual dimension to their emerging identity. Yet sexual expression varies dramatically with time and culture. Among American women born before 1900, a mere 3 percent had experienced premarital sex by age 18 (Smith, 1998). A century later, about half of U.S. ninth- to twelfth-graders reported having had sexual intercourse (CDC, 2010). Teen intercourse rates are roughly similar in Western Europe and in Latin America, but much lower in Arab and Asian countries and among North Americans of Asian descent (McLaughlin et al., 1997; Wellings et al., 2006). Given the wide variation across time and place, it's no surprise that twin research has found that environmental factors accounted

for almost three-fourths of the individual variation in age of sexual initiation (Bricker et al., 2006). Family and cultural values matter.

Compared with European teens, American teens have a higher rate of STIs and also of teen pregnancy (Call et al., 2002; Sullivan/Anderson, 2009). What environmental factors contribute to teen pregnancy?

Minimal communication about birth control Many teenagers are uncomfortable discussing contraception with their parents, partners, and peers. Teens who talk freely with parents, and who are in an exclusive relationship with a partner with whom they communicate openly, are more likely to use contraceptives (Aspy et al., 2007; Milan & Kilmann, 1987).

Guilt related to sexual activity In another survey, 72 percent of sexually active 12- to 17-year-old American girls said they regretted having had sex (Reuters, 2000). Sexual inhibitions or ambivalence can restrain sexual activity, but if passion overwhelms intentions they may also reduce attempts at birth control (Gerrard & Luus, 1995; MacDonald & Hynie, 2008).

Alcohol use Sexually active teens are typically alcohol-using teens (Zimmer-Gembeck & Helfand, 2008), and those who use alcohol prior to sex are less likely to use condoms (Kotchick et al., 2001). By depressing the brain centers that control judgment, inhibition, and self-awareness, alcohol disarms normal restraints, a phenomenon well known to sexually coercive males.

"All of us who make motion pictures are teachers, teachers with very loud voices." -Film producer George Lucas, Academy Award ceremonies, 1992

Mass media norms of unprotected promiscuity Media help write the "social scripts" that affect our perceptions and actions. So what sexual scripts do today's media write on our minds? An average hour of prime-time television on the three major U.S. networks has contained 15 sexual acts, words, and innuendos. The partners were usually unmarried, with no prior romantic relationship, and few communicated any concern for birth control or STIs (Brown et al., 2002; Kunkel, 2001; Sapolsky & Tabarlet, 1991). The more sexual content adolescents view (even when controlling for other predictors of early sexual activity), the more likely they are to perceive their peers as sexually active, to develop sexually permissive attitudes, and to experience early intercourse (Escobar-Chaves et al., 2005; Martino et al., 2005; Ward & Friedman, 2006). (See Close-up: The Sexualization of Girls.)

Recently, there has been a greater emphasis on teen abstinence within some comprehensive sex-education programs. A government-commissioned study of four urban, school-based abstinence programs found that 49 percent of students not participating had sex over the next four to six years. And how many participating in the abstinence programs did so? An identical 49 percent (Trenholm et al., 2007). A National Longitudinal Study of Adolescent Health followed abstinence pledgers and nonpledgers (matched samples of similarly conservative teens who had never had sex). Five years later, the pledgers—82 percent of whom denied having ever pledged—were just as likely to have had premarital sex (Rosenbaum, 2009). However, a more recent experiment offered African-American middle school students an abstinence education program rooted in social psychological theory and research. In the ensuing two years, only 34 percent of those who participated started having sex, compared with 49 percent of those randomly assigned to a health promotion control group (Jemmott et al., 2010).

The National Longitudinal Study of Adolescent Health among 12,000 teens found several factors that predicted sexual restraint:

- *High intelligence* Teens with high rather than average intelligence test scores more often delayed sex, partly because they appreciated possible negative consequences and were more focused on future achievement than on here-and-now pleasures (Halpern et al., 2000).
- *Religious engagement* Actively religious teens have more often reserved sexual activity for adulthood (Lucero et al., 2008).

Close-up

The Sexualization of Girls

As you have surely noticed, TV, the Internet, music videos and lyrics, movies, magazines, sports media, and advertising often portray women and even girls as sexual objects. The frequent result, according to both an American Psychological Association task force (2007) and the Scottish Parliament (2010), is harm to their self-image, and unhealthy sexual development.

Sexualization occurs when girls

- are led to value themselves in terms of their sexual appeal.
- compare themselves to narrowly defined beauty standards.
- see themselves as sexual beings for others' use.

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In experiments, the APA task force reported, being made self-conscious about one's body, such as by wearing a swimsuit, disrupts thinking when doing math computations or logical reasoning. Sexualization also contributes to eating disorders and depression, and to unrealistic expectations regarding sexuality.

Mindful of today's sexualizing media, the APA has some suggestions for countering these messages. Parents, teachers, and others can teach girls "to value themselves for who they are rather than how they look." They can teach boys "to value girls as friends, sisters, and girlfriends, rather than as sexual objects." And they can help girls and boys develop "media literacy skills" that enable them to recognize and resist the message that women are sexual objects and that a thin, sexy look is all that matters.

- *Father presence* In studies that followed hundreds of New Zealand and U.S. girls from age 5 to 18, a father's absence was linked to sexual activity before age 16 and to teen pregnancy (Ellis et al., 2003). These associations held even after adjusting for other adverse influences, such as poverty. Close family attachments—families that eat together and where parents know their teens' activities and friends—also predicted later sexual initiation (Coley et al., 2008).
- *Participation in service learning programs* Several experiments have found that teens volunteering as tutors or teachers' aides, or participating in community projects, had lower pregnancy rates than were found among comparable teens randomly assigned to control conditions (Kirby, 2002; O'Donnell et al., 2002). Researchers are unsure why. Does service learning promote a sense of personal competence, control, and responsibility? Does it encourage more future-oriented thinking? Or does it simply reduce opportunities for unprotected sex?

Eidos Scripps Howard Photo Service/Newscom

Keeping abreast of hypersexuality An analysis of the 60 top-selling video games found 489 characters, 86 percent of whom were males (like most of the game players). The female characters were much more likely than the male characters to be "hypersexualized"—partially nude or revealingly clothed, with large breasts and tiny waists (Downs & Smith, 2010).

Sexual Orientation

53-5 What has research taught us about sexual orientation?

We express the *direction* of our sexual interest in our **sexual orientation**—our enduring sexual attraction toward members of our own sex *(homosexual orientation),* the other sex *(heterosexual orientation),* or both sexes *(bisexual orientation).* As far as we know, all cultures in all times have been predominantly heterosexual (Bullough, 1990). Some cultures have condemned same-sex relations. (In Kenya and Nigeria, 98 percent have thought homosexuality is "never justified" [Pew, 2006].) Others have accepted same-sex marriage, which by 2013 had become legal in 14 countries. But in both cases, heterosexuality prevails and homosexuality endures.

sexual orientation an enduring sexual attraction toward members of either one's own sex (homosexual orientation), the other sex (heterosexual orientation), or both sexes (bisexual orientation).

FYI

In one British survey, of the 18,876 people contacted, 1 percent were seemingly asexual, having "never felt sexually attracted to anyone at all" (Bogaert, 2004, 2006b).

How many people are exclusively homosexual? About 10 percent, as the popular press has often assumed? Nearly 25 percent, as average Americans estimated in a 2011 Gallup survey (Morales, 2011)? Not according to more than a dozen national surveys that have explored sexual orientation in Europe and the United States, using methods protecting the respondents' anonymity. The most accurate figure seems to be about 3 percent of men and 1 or 2 percent of women, or perhaps a tad more if allowing for some underreporting (Chandra et al., 2011; Gates & Newport, 2012; Herbenick et al., 2010a,b). Fewer than 1 percent of survey respondents—for example, only 12 people out of 7076 Dutch adults in one survey (Sandfort et al., 2001)—have reported being actively bisexual. A larger number of adults—13 percent of women and 5 percent of men in a U.S. National Center for Health Statistics survey—report some same-sex sexual contact during their lives (Chandra et al., 2011). And still more have had an occasional homosexual fantasy.

What does it feel like to be the "odd man (or woman) out" in a heterosexual culture? If you are heterosexual, one way to understand is to imagine how you would feel if you were socially isolated for openly admitting or displaying your feelings toward someone of the other sex. How would you react if you overheard people making crude jokes about heterosexual people, or if most movies, TV shows, and advertisements portrayed (or implied) homosexuality? And how would you answer if your family members were pleading with you to change your heterosexual lifestyle and to enter into a homosexual marriage?

Facing such reactions, homosexual people often struggle with their sexual orientation. They may at first try to ignore or deny their desires, hoping they will go away. But they don't. The feelings typically persist, as do those of heterosexual people—who are similarly incapable of becoming homosexual (Haldeman, 1994, 2002; Myers & Scanzoni, 2005).

Most of today's psychologists therefore view sexual orientation as neither willfully chosen nor willfully changed. "Efforts to change sexual orientation are unlikely to be successful and involve some risk of harm," declared a 2009 American Psychological Association report. In 1973, the American Psychiatric Association dropped homosexuality from its list of "mental illnesses." In 1993, the World Health Organization did the same, as did Japan's and China's psychiatric associations in 1995 and 2001. Some have noted that rates of depression and attempted suicide are higher among gays and lesbians. Many psychologists believe, however, that these symptoms may result from experiences with bullying, harassment, and discrimination (Sandfort et al., 2001; Warner et al., 2004). "Homosexuality, in and of itself, is not associated with mental disorders or emotional or social problems," declared the American Psychological Association (2007).

Thus, sexual orientation in some ways is like handedness: Most people are one way, some the other. A very few are ambidextrous. Regardless, the way one is endures.

This conclusion is most strongly established for men. Compared with men's sexual orientation, women's tends to be less strongly felt and may be more variable (Chivers, 2005; Diamond, 2008; Peplau & Garnets, 2000). Men's lesser *erotic plasticity* (sexual variability) is apparent in many ways (Baumeister, 2000). Adult women's sexual drive and interests are more flexible and varying than are adult men's. Women, more than men, for example, prefer to alternate periods of high sexual activity with periods of almost none. They are also more likely than men to feel and act on bisexual attractions (Mosher et al., 2005).

STAN HONDA/AFP/Getty Images

Driven to suicide In 2010, Rutgers University student Tyler Clementi jumped off this bridge after his intimate encounter with another man reportedly became known. Reports then surfaced of other gay teens who had reacted in a similarly tragic fashion after being taunted. Since 2010, Americans—especially those under 30—have been increasingly supportive of those with same-sex orientations.

FYI

Note that the scientific question is not "What causes homosexuality?" (or "What causes heterosexuality?") but "What causes differing sexual orientations?" In pursuit of answers, psychological science compares the backgrounds and physiology of people whose sexual orientations *differ.*

Environment and Sexual Orientation

So, our sexual orientation is something we do not choose and (especially for males) seemingly cannot change. Where then, do these preferences come from? Let's look first at possible environmental influences on sexual orientation. To see if you can anticipate the conclusions that have emerged from hundreds of studies, try answering *Yes* or *No* to these questions:

1. Is homosexuality linked with problems in a child's relationships with parents, such as with a domineering mother and an ineffectual father, or a possessive mother and a hostile father?

2. Does homosexuality involve a fear or hatred of people of the other sex, leading individuals to direct their desires toward members of their own sex?
3. Is sexual orientation linked with levels of sex hormones currently in the blood?
4. As children, were most homosexuals molested, seduced, or otherwise sexually victimized by an adult homosexual?

The answer to all these questions has been *No* (Storms, 1983). In a search for possible environmental influences on sexual orientation, Kinsey Institute investigators interviewed nearly 1000 homosexuals and 500 heterosexuals. They assessed nearly every imaginable psychological cause of homosexuality—parental relationships, childhood sexual experiences, peer relationships, and dating experiences (Bell et al., 1981; Hammersmith, 1982). Their findings: Homosexuals were no more likely than heterosexuals to have been smothered by maternal love or neglected by their father. And consider this: If "distant fathers" were more likely to produce homosexual sons, then shouldn't boys growing up in father-absent homes more often be gay? (They are not.) And shouldn't the rising number of such homes have led to a noticeable increase in the gay population? (It has not.) Most children raised by gay or lesbian parents grow up straight and well-adjusted (Gartrell & Bos, 2010).

A bottom line has emerged from a half-century's theory and research: If there are environmental factors that influence sexual orientation, we do not yet know what they are.


Stephen J. Carerra/AP Photo

Personal values affect sexual orientation less than they affect other forms of sexual behavior Compared with people who rarely attend religious services, for example, those who attend regularly are one-third as likely to have lived together before marriage, and they report having had many fewer sex partners. But (if male) they are just as likely to be homosexual (Smith, 1998).

Biology and Sexual Orientation

The lack of evidence for environmental causes of homosexuality has motivated researchers to explore possible biological influences. They have considered

- evidence of homosexuality in other species,
- gay-straight brain differences,
- genetics, and
- prenatal hormones.

SAME-SEX ATTRACTION IN OTHER SPECIES

In Boston's Public Garden, caretakers have solved the mystery of why a much-loved swan couple's eggs never hatch. Both swans are female. In New York City's Central Park Zoo, penguins Silo and Roy spent several years as devoted same-sex partners. At least occasional same-sex relations have been observed in several hundred species (Bagemihl, 1999). Grizzlies, gorillas, monkeys, flamingos, and owls are all on the long list. Among rams, for example, some 7 to 10 percent (to sheep-breeding ranchers, the "duds") display same-sex attraction by shunning ewes and seeking to mount other males (Perkins & Fitzgerald, 1997). Some degree of homosexual behavior seems a natural part of the animal world.


Boston Globe via Getty Images

Juliet and Juliet Boston's beloved swan couple, "Romeo and Juliet," were discovered actually to be, as are many other animal partners, a same-sex pair.

GAY-STRAIGHT BRAIN DIFFERENCES

Researcher Simon LeVay (1991) studied sections of the hypothalamus (a brain structure linked to emotion) taken from deceased heterosexual and homosexual people. As a gay man, LeVay wanted to do "something connected with my gay identity." To avoid biasing the results, he did a *blind study,* without knowing which donors were gay or straight. After 9 months of peering through his microscope at a hypothalamus cell cluster that seemed to come in different sizes, he consulted the donor records. The cell cluster was reliably larger in heterosexual men than in women and homosexual men. "I was almost in a state of shock," LeVay said (1994). "I took a walk by myself on the cliffs over the ocean. I sat for half an hour just thinking what this might mean."

It should not surprise us that brains differ with sexual orientation. Remember, *everything psychological is simultaneously biological*. But when did the brain difference begin? At conception? During childhood or adolescence? Did experience produce the difference? Or was it genes or prenatal hormones (or genes via prenatal hormones)?

LeVay does not view this cell cluster as an "on-off button" for sexual orientation. Rather, he believes it is an important part of a brain pathway that is active during sexual behavior. He agrees that sexual behavior patterns could influence the brain's anatomy. (Neural pathways in our brain do grow stronger with use.) In fish, birds, rats, and humans, brain structures vary with experience—including sexual experience (Breedlove, 1997). But LeVay believes it more likely that brain anatomy influences sexual orientation. His hunch seems confirmed by the discovery of a similar difference found between the 7 to 10 percent of male sheep that display same-sex attraction and the 90+ percent attracted to females (Larkin et al., 2002; Roselli et al., 2002, 2004). Moreover, such differences seem to develop soon after birth, perhaps even before birth (Rahman & Wilson, 2003).

Since LeVay's discovery, other researchers have reported additional gay-straight brain activity differences. One is an area of the hypothalamus that governs sexual arousal (Savic et al., 2005). When straight women were given a whiff of a scent derived from men's sweat (which contains traces of male hormones), this area became active. Gay men's brains responded similarly to the men's scent. Straight men's brains did not. They showed the arousal response only to a female hormone sample. In a similar study, lesbians' responses differed from those of straight women (Kranz & Ishai, 2006; Martins et al., 2005).

GENETIC INFLUENCES

Three lines of evidence suggest a genetic influence on sexual orientation.

FAMILY STUDIES Researchers have speculated about possible reasons why "gay genes" might persist in the human gene pool, given that same-sex couples cannot naturally reproduce. One possible answer is kin selection. Recall from Module 15 the evolutionary psychology reminder that many of our genes also reside in our biological relatives. Perhaps, then, gay people's genes live on through their supporting the survival and reproductive success of their nieces, nephews, and other relatives (who also carry many of the same genes). Gay men make generous uncles, suggests one study of Samoans (Vasey & VanderLaan, 2010).

An alternative "fertile females" theory suggests that maternal genetics may also be at work (Bocklandt et al., 2006). Homosexual men tend to have more homosexual relatives on their mother's side than on their father's (Camperio-Ciani et al., 2004, 2009; Zietsch et al., 2008). And the relatives on the mother's side also produce more offspring than do the maternal relatives of heterosexual men. Perhaps the genes that dispose women to be strongly attracted to men, and therefore to have more children, also dispose some men to be attracted to men (LeVay, 2011).

TWIN STUDIES Twin studies indicate that genes influence sexual orientation. Identical twins (who have identical genes) are somewhat more likely than fraternal twins (whose genes are not identical) to share a homosexual orientation (Alanko et al., 2010; Långström et al., 2008, 2010). However, because sexual orientation differs in many identical twin pairs (especially female twins), other factors must also play a role.

FRUIT FLY STUDIES Laboratory experiments on fruit flies have altered a single gene and changed the flies' sexual orientation and behavior (Dickson, 2005). During courtship, females acted like males (pursuing other females) and males acted like females (Demir & Dickson, 2005). With humans, it's likely that multiple genes, possibly in interaction with other influences, shape sexual orientation. In search of such genetic markers, one study financed by the U.S. National Institutes of Health is analyzing the genes of more than 1000 gay brothers.

PRENATAL INFLUENCES

"Modern scientific research indicates that sexual orientation is . . . partly determined by genetics, but more specifically by hormonal activity in the womb." -Glenn Wilson and Qazi Rahman, *Born Gay: The Psychobiology of Sex Orientation*, 2005

Twins share not only genes, but also a prenatal environment. Two sets of findings indicate that prenatal environment matters.

First, in humans, a critical period for brain development seems to fall between the middle of the second and fifth months after conception (Ellis & Ames, 1987; Gladue, 1990; Meyer-Bahlburg, 1995). Exposure to the hormone levels typically experienced by female fetuses during this period may predispose a person (female or male) to be attracted to males in later life. When pregnant sheep were injected with testosterone during a similar critical period, their female offspring later showed homosexual behavior (Money, 1987).

Second, the mother's immune system may play a role in the development of sexual orientation. Men who have older brothers are somewhat more likely to be gay—about one-third more likely for each additional older brother (Blanchard, 1997, 2008; Bogaert, 2003). If the odds of homosexuality are roughly 2 percent among first sons, they would rise to nearly 3 percent among second sons, 4 percent for third sons, and so on for each additional older brother (see **FIGURE 53.3**). The reason for this curious effect—called the *older-brother* or *fraternal birth-order effect*—is unclear. But the explanation does seem biological. The effect does not occur among adopted brothers (Bogaert, 2006). Researchers suspect the mother's immune system may have a defensive response to substances produced by male fetuses. After each pregnancy with a male fetus, the maternal antibodies may become stronger and may prevent the fetal brain from developing in a typical male pattern.

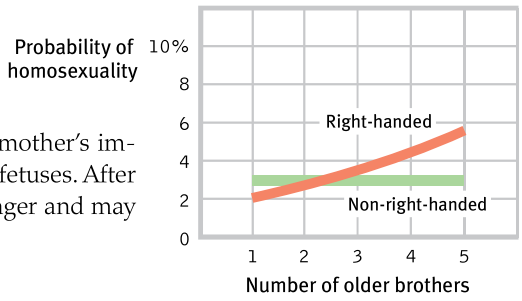


Figure 53.3
The fraternal birth-order effect Researcher Ray Blanchard (2008) offered these approximate curves depicting a man's likelihood of homosexuality as a function of his number of older brothers. This correlation has been found in several studies, but only among right-handed men (as about 9 in 10 men are).

GAY-STRAIGHT TRAIT DIFFERENCES

On several traits, gays and lesbians appear to fall midway between straight females and males (**TABLE 53.1**; see also LeVay, 2011; Rahman & Koerting, 2008). Gay men tend to

Table 53.1 Biological Correlates of Sexual Orientation

Gay-straight trait differences

Sexual orientation is part of a package of traits. Studies—some in need of replication—indicate that homosexuals and heterosexuals differ in the following biological and behavioral traits:

- spatial abilities
- fingerprint ridge counts
- auditory system development
- handedness
- occupational preferences
- relative finger lengths
- gender nonconformity
- age of onset of puberty in males
- male body size
- sleep length
- physical aggression
- walking style

On average (the evidence is strongest for males), results for gays and lesbians fall between those of straight men and straight women. Three biological influences—brain, genetic, and prenatal—may contribute to these differences.

Brain differences

- One hypothalamic cell cluster is smaller in women and gay men than in straight men.
- Gay men's hypothalamus reacts as do straight women's to the smell of sex-related hormones.

Genetic influences

- Shared sexual orientation is higher among identical twins than among fraternal twins.
- Sexual attraction in fruit flies can be genetically manipulated.
- Male homosexuality often appears to be transmitted from the mother's side of the family.

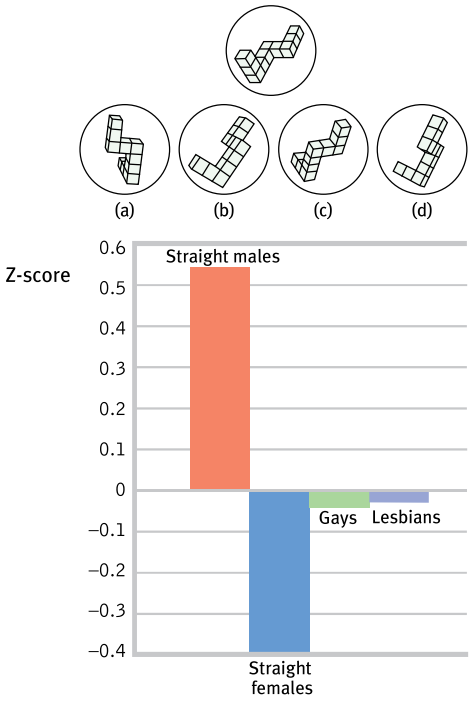
Prenatal influences

- Altered prenatal hormone exposure may lead to homosexuality in humans and other animals.
- Men with several older biological brothers are more likely to be gay, possibly due to a maternal immune-system reaction.

Figure 53.4

Spatial abilities and sexual orientation Which of the four figures can be rotated to match the target figure at the top? Straight males tend to find this an easier task than do straight females, with gays and lesbians intermediate. (From Rahman et al., 2003, with 60 people tested in each group.)

Answer: Figures a and d.



be shorter and lighter than straight men—a difference that appears even at birth. Women in same-sex marriages were mostly heavier than average at birth (Bogaert, 2010; Frisch & Zdravkovic, 2010). Data from 20 studies have also revealed handedness differences: Homosexual participants were 39 percent more likely to not be right-handed (Blanchard, 2008; Lalumière et al., 2000).

Gay-straight spatial abilities also differ. On mental rotation tasks such as the one illustrated in **FIGURE 53.4** (Vandenberg & Kuse, 1978), straight men tend to outscore straight women but the scores of gays and lesbians fall between those of straight men and women (Rahman et al., 2003). But straight women and gays both outperform straight men at remembering objects' spatial locations in tasks like those found in memory games (Hassan & Rahman, 2007).

* * *

"There is no sound scientific evidence that sexual orientation can be changed." -UK Royal College of Psychiatrists, 2009

The consistency of the brain, genetic, and prenatal findings has swung the pendulum toward a biological explanation of sexual orientation (LeVay, 2011; Rahman & Koerting, 2008). Although "much remains to be discovered," concludes Simon LeVay (2011, p. xvii), "the same processes that are involved in the biological development of our bodies and brains as male or female are also involved in the development of sexual orientation."

Before You Move On

► ASK YOURSELF

What do you think would be an effective strategy for reducing teen pregnancy?

► TEST YOURSELF

What factors have been found to predict sexual restraint among teens?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 53 Review

53-1 How is our biological sex determined, and how do sex hormones influence prenatal and adolescent development?

- Both sex chromosomes and sex hormones influence development.
- Biological sex is determined by the father's contribution to the twenty-third pair of chromosomes.
  - The mother always contributes an *X chromosome.*
  - The father may also contribute an X chromosome, producing a female, or a *Y chromosome,* producing a male by triggering additional *testosterone* release and the development of male sex organs.
- During *puberty,* both *primary* and *secondary sex characteristics* develop.
- Sex-related genes and physiology influence behavioral and cognitive gender differences between males and females.

53-2 What are some of the ways that sexual development varies?

- Intersex individuals are born with intermediate or unusual combinations of male and female characteristics.
- Research suggests sex-reassignment surgery can be problematic.

53-3 How can sexually transmitted infections be prevented?

- Safe-sex practices help prevent sexually transmitted infections (STIs).
- Condoms are especially effective in preventing transmission of HIV, the virus that causes *AIDS.*
- A vaccination administered before sexual contact can prevent most human papilloma virus infections.

53-4 What factors influence teenagers' sexual behaviors and use of contraceptives?

- Rates of teen intercourse vary from culture to culture and era to era.
- Factors contributing to teen pregnancy include minimal communication about birth control with parents, partners, and peers; guilt related to sexual activity; alcohol use; and mass media norms of unprotected and impulsive sexuality.
- High intelligence, religious engagement, father presence, and participation in service learning programs have been predictors of teen sexual restraint.

53-5 What has research taught us about sexual orientation?

- *Sexual orientation* is an enduring sexual attraction toward members of one's own sex (homosexual orientation), the other sex (heterosexual orientation), or both sexes (bisexual orientation).
- Sexual orientation is not an indicator of mental health.
- There is no evidence that environmental influences determine sexual orientation.
- Evidence for biological influences includes the presence of same-sex attraction in many animal species; straight-gay differences in body and brain characteristics; higher rates in certain families and in identical twins; exposure to certain hormones during critical periods of prenatal development; and the fraternal birth-order effect.

Multiple-Choice Questions

1. Which of the following is an example of a primary sex characteristic?

a. Nonreproductive traits such as breasts and hips in girls
b. Facial hair in boys
c. Deepened voice in boys
d. Pubic and underarm hair in both sexes
e. Reproductive organs in both sexes

2. Which of the following is a *primary* sex characteristic that changes at puberty?

a. A growth spurt in height, especially for boys
b. Development of breasts for girls
c. Full development of external genitalia in both sexes
d. Facial hair and deepened voice for boys
e. Appearance of pubic and underarm hair in both sexes

3. Which of the following has been shown to be the most effective intervention to reduce teen pregnancies?

a. Abstinence-only sex education in schools
b. Participation in service learning programs
c. Increasing guilt related to sexual activity
d. Taking a pledge to remain abstinent
e. Increased exposure to sexual content in the media

Practice FRQs

1. Provide examples of a primary and a secondary sex characteristic for both males and females.

Answer

1 point: Male primary sex characteristics include growth of penis and testes and first ejaculation (spermarche).

1 point: Male secondary sex characteristics include pubic hair, body hair, widening of the shoulders, and lower voice.

1 point: Female primary sex characteristics include menarche and full development of external genitalia.

1 point: Female secondary sex characteristics include pubic hair, body hair, widening of the hips, and growth of breasts.

2. Explain three examples of evidence that suggests a genetic influence on sexual orientation.

(3 points)

Module 54

Adulthood: Physical, Cognitive, and Social Development

Module Learning Objectives

- **54-1** Identify the physical changes that occur during middle and late adulthood.
- **54-2** Assess the impact of aging on memory.
- **54-3** Discuss the themes and influences that mark the social journey from early adulthood to death.
- **54-4** Describe trends in people's self-confidence and life satisfaction across the life span.
- **54-5** Describe the range of reactions to the death of a loved one.

The unfolding of people's adult lives continues across the life span. It is, however, more difficult to generalize about adulthood stages than about life's early years. If you know that James is a 1-year-old and Jamal is a 10-year-old, you could say a great deal about each child. Not so with adults who differ by a similar number of years. The boss may be 30 or 60; the marathon runner may be 20 or 50; the 19-year-old may be a parent who supports a child or a child who receives an allowance. Yet our life courses are in some ways similar. Physically, cognitively, and especially socially, we differ at age 50 from our 25-year-old selves. In the discussion that follows, we recognize these differences and use three terms: *early adulthood* (roughly twenties and thirties), *middle adulthood* (to age 65), and *late adulthood* (the years after 65). Within each of these stages, people will vary widely in physical, psychological, and social development.

Physical Development

54-1 What physical changes occur during middle and late adulthood?

Like the declining daylight after the summer solstice, our physical abilities—muscular strength, reaction time, sensory keenness, and cardiac output—all begin an almost imperceptible decline in our mid-twenties. Athletes are often the first to notice. World-class sprinters and swimmers peak by their early twenties. Women—who mature earlier than men—also peak earlier. But most of us—especially those of us whose daily lives do not require top physical performance—hardly perceive the early signs of decline.

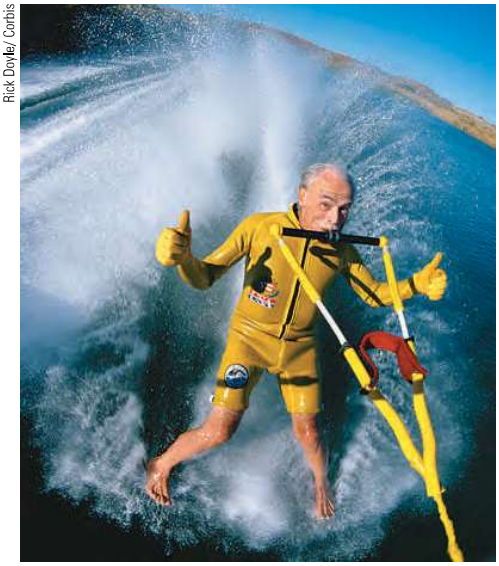
menopause the time of natural cessation of menstruation; also refers to the biological changes a woman experiences as her ability to reproduce declines.

Physical Changes in Middle Adulthood

Post-40 athletes know all too well that physical decline gradually accelerates. During early and middle adulthood, physical vigor has less to do with age than with a person's health and exercise habits. Many of today's physically fit 50-year-olds run 4 miles with ease, while sedentary 25-year-olds find themselves huffing and puffing up two flights of stairs.

Aging also brings a gradual decline in fertility, especially for women. For a 35- to 39-year-old woman, the chances of getting pregnant after a single act of intercourse are only half those of a woman 19 to 26 (Dunson et al., 2002). Men experience a gradual decline in sperm count, testosterone level, and speed of erection and ejaculation. Women experience **menopause,** as menstrual cycles end, usually within a few years of age 50. Expectations and attitudes influence the emotional impact of this event. Is it a sign of lost femininity and growing old? Or is it liberation from menstrual periods and fears of pregnancy? For men, too, expectations can influence perceptions. Some experience distress related to a perception of declining virility and physical capacities, but most age without such problems.

Rick Doyle/ Corbis



Adult abilities vary widely
97-year-olds: Don't try this. In 2002, George Blair became the world's oldest barefoot water skier, just days after reaching age 87. And he did it again in 2012, at age 97!

With age, sexual activity lessens. Nevertheless, most men and women remain capable of satisfying sexual activity, and most express satisfaction with their sex life. This was true of 70 percent of Canadians surveyed (ages 40 to 64) and 75 percent of Finns (ages 65 to 74) (Kontula & Haavio-Mannila, 2009; Wright, 2006). In another survey, 75 percent of respondents reported being sexually active into their eighties (Schick et al., 2010). And in an American Association of Retired Persons sexuality survey, it was not until age 75 or older that most women and nearly half of men reported little sexual desire (DeLamater & Sill, 2005). Given good health and a willing partner, the flames of desire, though simmered down, live on. As Alex Comfort (1992, p. 240) jested, "The things that stop you having sex with age are exactly the same as those that stop you riding a bicycle (bad health, thinking it looks silly, no bicycle)."

"Happy fortieth. I'll take the muscle tone in your upper arms, the girlish timbre of your voice, your amazing tolerance for caffeine, and your ability to digest french fries. The rest of you can stay."

Physical Changes in Later Life

Is old age "more to be feared than death" (Juvenal, *Satires*)? Or is life "most delightful when it is on the downward slope" (Seneca, *Epistulae ad Lucilium*)? What is it like to grow old?

STRENGTH AND STAMINA

Although physical decline begins in early adulthood, we are not usually acutely aware of it until later life, when the stairs get steeper, the print gets smaller, and other people seem to mumble more. Muscle strength, reaction time, and stamina diminish in late adulthood. As a lifelong basketball player, I find myself increasingly not racing for that loose ball. But even diminished vigor is sufficient for normal activities. Moreover, exercise slows aging. Active older adults tend to be mentally quick older adults. Physical exercise not only enhances muscles, bones, and energy and helps to prevent obesity and heart disease, it also stimulates brain cell development and neural connections, thanks perhaps to increased oxygen and nutrient flow (Erickson et al., 2010; Pereira et al., 2007).

"For some reason, possibly to save ink, the restaurants had started printing their menus in letters the height of bacteria." -Dave Barry, *Dave Barry Turns Fifty*, 1998

SENSORY ABILITIES

With age, visual sharpness diminishes, and distance perception and adaptation to light-level changes are less acute. The eye's pupil shrinks and its lens becomes less transparent, reducing the amount of light reaching the retina: A 65-year-old retina receives only about one-third as much light as its 20-year-old counterpart (Kline & Schieber, 1985). Thus, to see as well as a 20-year-old when reading or driving, a 65-year-old needs three times as much light—a reason for buying cars with untinted windshields. This also explains why older people sometimes ask people your age, "Don't you need better light for reading?"

The senses of smell and hearing also diminish. In Wales, teens' loitering around a convenience store has been discouraged by a device that emits an aversive high-pitched sound almost no one over 30 can hear (Lyall, 2005).

FYI

Most stairway falls taken by older people occur on the top step, precisely where the person typically descends from a window-lit hallway into the darker stairwell (Fozard & Popkin, 1978). Our knowledge of aging could be used to design environments that would reduce such accidents (National Research Council, 1990).

HEALTH

For those growing older, there is both bad and good news about health. The bad news: The body's disease-fighting immune system weakens, making older adults more susceptible to life-threatening ailments, such as cancer and pneumonia. The good news: Thanks partly to a lifetime's accumulation of antibodies, people over 65 suffer fewer short-term ailments, such as common flu and cold viruses. One study found they were half as likely as 20-year-olds and one-fifth as likely as preschoolers to suffer upper respiratory flu each year (National Center for Health Statistics, 1990).

Pascal Parrot/Sygma/Corbis

Pascal Parrot/Sygma/Corbis

World record for longevity? French woman Jeanne Calment, the oldest human in history with authenticated age, died in 1998 at age 122. At age 100, she was still riding a bike. At age 114, she became the oldest film actor ever, by portraying herself in *Vincent and Me.* She is shown at left at age 20 in 1895.

THE AGING BRAIN

Up to the teen years, we process information with greater and greater speed (Fry & Hale, 1996; Kail, 1991). But compared with you, older people take a bit more time to react, to solve perceptual puzzles, even to remember names (Bashore et al., 1997; Verhaeghen & Salthouse, 1997). The neural processing lag is greatest on complex tasks (Cerella, 1985; Poon, 1987). At video games, most 70-year-olds are no match for a 20-year-old.

Slower neural processing combined with diminished sensory abilities can increase accident risks. As **FIGURE 54.1** indicates, fatal accident rates per mile driven increase sharply after age 75. By age 85, they exceed the 16-year-old level. Nevertheless, because older people drive less, they account for fewer than 10 percent of crashes (Coughlin et al., 2004).

Brain regions important to memory begin to atrophy during aging (Schacter, 1996). In early adulthood, a small, gradual net loss of brain cells begins, contributing by age 80 to a brain-weight reduction of 5 percent or so. Earlier, we noted that late-maturing frontal lobes

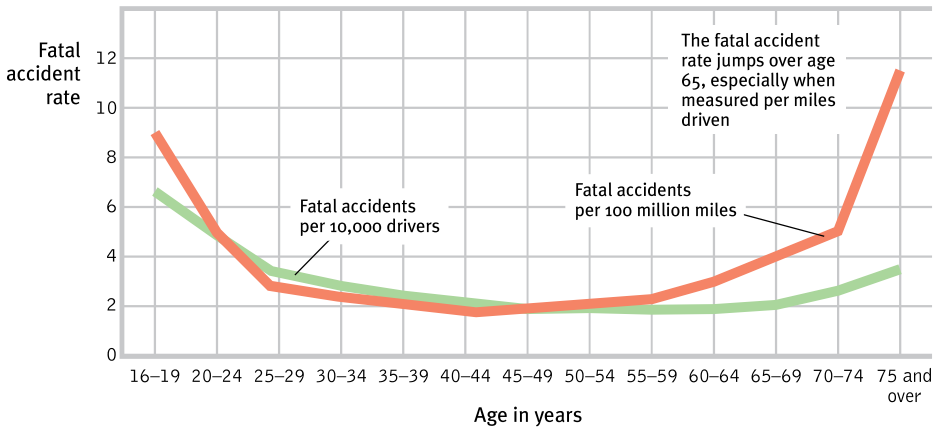


Figure 54.1

Age and driver fatalities Slowing reactions contribute to increased accident risks among those 75 and older, and their greater fragility increases their risk of death when accidents happen (NHTSA, 2000). Would you favor driver exams based on performance, not age, to screen out those whose slow reactions or sensory impairments indicate accident risk?

FYI

How old does a person have to be before you think of him or her as old? Depends on who you ask. For 18- to 29-year-olds, 67 was old. For those 60 and over, old was 76 (Yankelovich, 1995).

help account for teen impulsivity. Late in life, atrophy of the inhibition-controlling frontal lobes seemingly explains older people's occasional blunt questions and comments ("Have you put on weight?") (von Hippel, 2007).

As noted earlier, exercise helps counteract some effects of brain aging. It aids memory by stimulating the development of neural connections and by promoting neurogenesis, the birth of new nerve cells, in the hippocampus. Sedentary older adults randomly assigned to aerobic exercise programs exhibit enhanced memory, sharpened judgment, and reduced risk of *neurocognitive disorder* (formerly called "dementia") (Colcombe et al., 2004; Liang et al., 2010; Nazimek, 2009).

Exercise also helps maintain the telomeres, which protect the ends of chromosomes (Cherkas et al., 2008; Erickson, 2009; Pereira et al., 2007). With age, telomeres wear down, much as the tip of a shoelace frays. This wear is accentuated by smoking, obesity, or stress. As telomeres shorten, aging cells may die without being replaced with perfect genetic replicas (Epel, 2009).

"I am still learning." -Michelangelo, 1560, at age 85

The message for seniors is clear: We are more likely to rust from disuse than to wear out from overuse.

Cognitive Development

54-2 How does memory change with age?

AP® Exam Tip

This section is a good example of the complexity of seemingly simple questions. It seems like one should be able to answer a question like "Does memory decline with age?" with a straightforward *yes* or *no*. People are complex. Development is complex. We should not be surprised to learn that many factors influence memory in adulthood.

Among the most intriguing developmental psychology questions is whether adult cognitive abilities, such as memory, intelligence, and creativity, parallel the gradually accelerating decline of physical abilities.

As we age, we remember some things well. Looking back in later life, people asked to recall the one or two most important events over the last half-century tend to name events from their teens or twenties (Conway et al., 2005; Rubin et al., 1998). Whatever people experience around this time of life—the election of Barack Obama, the events of 9/11, the civil rights movement—becomes pivotal (Pillemer, 1998; Schuman & Scott, 1989). Our teens and twenties are a time of so many memorable "firsts"—first kiss, first job, first day at college or university, first meeting of in-laws.

Early adulthood is indeed a peak time for some types of learning and remembering. In one test of recall, people (1205 of them) watched videotapes as 14 strangers said their names, using a common format: "Hi, I'm Larry" (Crook & West, 1990). Then those strangers reappeared and gave additional details. For example, they said, "I'm from Philadelphia," providing more visual *and* voice cues for remembering the person's name. As **FIGURE 54.2** shows, after a second and third replay of the introductions, everyone remembered more names, but younger adults consistently surpassed older adults.

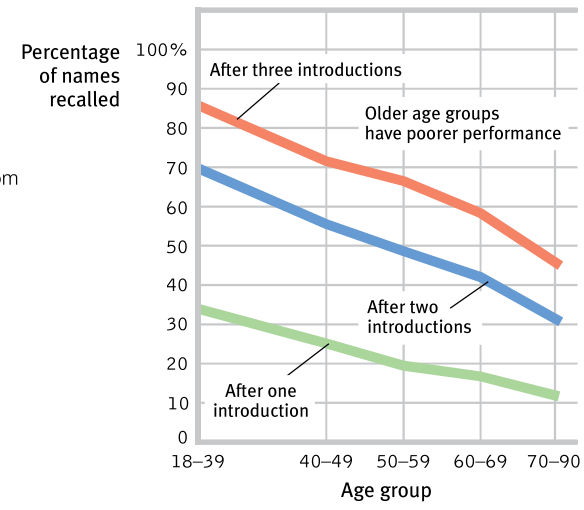


Figure 54.2
Tests of recall
Recalling new names introduced once, twice, or three times is easier for younger adults than for older ones. (Data from Crook & West, 1990.)

Perhaps it is not surprising, then, that nearly two-thirds of people over age 40 say their memory is worse than it was 10 years ago (KRC, 2001). In fact, how well older people remember depends on the task. In another experiment (Schonfield & Robertson, 1966), when asked to *recognize* 24 words they had earlier tried to memorize, people showed only a minimal decline in memory. When asked to *recall* that information without clues, the decline was greater (**FIGURE 54.3**).

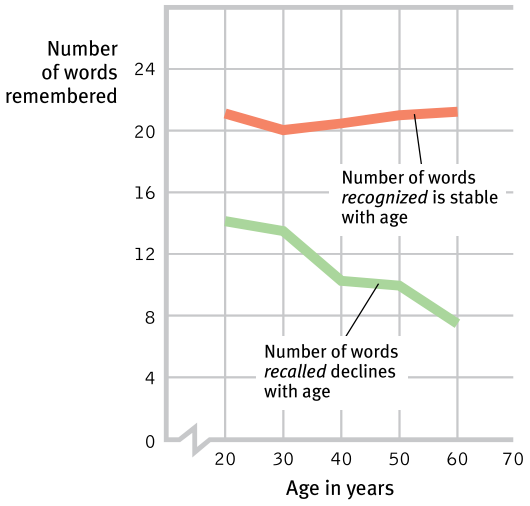


Figure 54.3

Recall and recognition in adulthood In this experiment, the ability to *recall* new information declined during early and middle adulthood, but the ability to *recognize* new information did not. (From Schonfield & Robertson, 1966.)

In our capacity to learn and remember, as in other areas of development, we differ. Younger adults vary in their abilities to learn and remember, but 70-year-olds vary much more. "Differences between the most and least able 70-year-olds become much greater than between the most and least able 50-year-olds," reports Oxford researcher Patrick Rabbitt (2006). Some 70-year-olds perform below nearly all 20-year-olds; other 70-year-olds match or outdo the average 20-year-old.

No matter how quick or slow we are, remembering seems also to depend on the type of information we are trying to retrieve. If the information is meaningless—nonsense syllables or unimportant events—then the older we are, the more errors we are likely to make. If the information is *meaningful,* older people's rich web of existing knowledge will help them to hold it. But they may take longer than younger adults to *produce* the words and things they know: Quick-thinking game show winners are usually young or middle-aged adults (Burke & Shafto, 2004). Older people's capacity to learn and remember *skills* declines less than their verbal recall (Graf, 1990; Labouvie-Vief & Schell, 1982; Perlmutter, 1983).

Module 62 explores another dimension of cognitive development: intelligence. As we will see, **cross-sectional studies** (comparing people of different ages) and **longitudinal studies** (restudying the same people over time) have identified mental abilities that do and do not change as people age. Age is less a predictor of memory and intelligence than is proximity to death. Tell me whether someone is 8 months or 8 years from death and, regardless of age, you've given me a clue to that person's mental ability. Especially in the last three or four years of life, cognitive decline typically accelerates (Wilson et al., 2007). Researchers call this near-death drop *terminal decline* (Backman & MacDonald, 2006).

Try This

What experiences from your high school years do you think you may never forget? (These years, and the next few, will be among the times of your life you may remember most easily when you are 50.)

cross-sectional study a study in which people of different ages are compared with one another.

longitudinal study research in which the same people are restudied and retested over a long period.

Social Development

54-3 What themes and influences mark our social journey from early adulthood to death?

Many differences between younger and older adults are created by significant life events. A new job means new relationships, new expectations, and new demands. Marriage brings the joy of intimacy and the stress of merging two lives. The three years surrounding the birth of a child bring increased life satisfaction for most parents (Dyrdal & Lucas, 2011). The death of a loved one creates an irreplaceable loss. Do these adult life events shape a sequence of life changes?

Adulthood's Ages and Stages

As people enter their forties, they undergo a transition to middle adulthood, a time when they realize that life will soon be mostly behind instead of ahead of them. Some psychologists have argued that for many the *midlife transition* is a crisis, a time of great struggle, regret, or even feeling struck down by life. The popular image of the midlife crisis is an early-forties man who forsakes his family for a younger girlfriend and a hot sports car. But the fact—reported by large samples of people—is that unhappiness, job dissatisfaction, marital dissatisfaction, divorce, anxiety, and suicide do *not* surge during the early forties (Hunter & Sundel, 1989; Mroczek & Kolarz, 1998). Divorce, for example, is most common among those in their twenties, suicide among those in their seventies and eighties. One study of emotional instability in nearly 10,000 men and women found "not the slightest evidence" that distress peaks anywhere in the midlife age range (McCrae & Costa, 1990).

For the 1 in 4 adults who report experiencing a life crisis, the trigger is not age but a major event, such as illness, divorce, or job loss (Lachman, 2004). Some middle-aged adults describe themselves as a "sandwich generation," simultaneously supporting their aging parents and their emerging adult children or grandchildren (Riley & Bowen, 2005).

social clock the culturally preferred timing of social events such as marriage, parenthood, and retirement.

Life events trigger transitions to new life stages at varying ages. The **social clock**—the definition of "the right time" to leave home, get a job, marry, have children, or retire—varies from era to era and culture to culture. The social clock still ticks, but people feel freer about being out of sync with it.

"The important events of a person's life are the products of chains of highly improbable occurrences." -Joseph Traub, "Traub's Law," 2003

Even *chance events* can have lasting significance, by deflecting us down one road rather than another (Bandura, 1982). Albert Bandura (2005) recalls the ironic true story of a book editor who came to one of Bandura's lectures on the "Psychology of Chance Encounters and Life Paths"—and ended up marrying the woman who happened to sit next to him. The sequence that led to my authoring this book (which was not my idea) began with my being seated near, and getting to know, a distinguished colleague at an international conference. Chance events can change our lives.

Adulthood's Commitments

Two basic aspects of our lives dominate adulthood. Erik Erikson called them *intimacy* (forming close relationships) and *generativity* (being productive and supporting future generations). Researchers have chosen various terms—*affiliation* and *achievement, attachment* and *productivity, connectedness* and *competence.* Sigmund Freud (1935) put it most simply: The healthy adult, he said, is one who can *love* and *work.*

LOVE

We typically flirt, fall in love, and commit—one person at a time. "Pair-bonding is a trademark of the human animal," observed anthropologist Helen Fisher (1993). From an evolutionary perspective, relatively monogamous pairing makes sense: Parents who cooperated to nurture their children to maturity were more likely to have their genes passed along to posterity than were parents who didn't.

Adult bonds of love are most satisfying and enduring when marked by a similarity of interests and values, a sharing of emotional and material support, and intimate self-disclosure (see Module 79). Couples who seal their love with commitment—via (in one Vermont study) marriage for heterosexual couples and civil unions for homosexual couples—more often endure (Balsam et al., 2008). Marriage bonds are especially likely to last when couples marry after age 20 and are well educated. Compared with their counterparts of 50 years ago, people in Western countries *are* better educated and marrying later. Yet, ironically, they are nearly twice as likely to divorce. (Both Canada and the United States

now have about one divorce for every two marriages, and in Europe, divorce is only slightly less common.) The divorce rate partly reflects women's lessened economic dependence and men's and women's rising expectations. We now hope not only for an enduring bond, but also for a mate who is a wage earner, caregiver, intimate friend, and warm and responsive lover.

Might test-driving life together in a "trial marriage" minimize divorce risk? In one Gallup survey of American twenty-somethings, 62 percent thought it would (Whitehead & Popenoe, 2001). In reality, in Europe, Canada, and the United States, those who cohabit before marriage have had *higher* rates of divorce and marital dysfunction than those who did not cohabit (Jose et al., 2010). The risk appears greatest for those cohabiting prior to engagement (Goodwin et al., 2010; Rhoades et al., 2009).


Purestock/Alamy

Love Intimacy, attachment, commitment—love by whatever name—is central to healthy and happy adulthood.

American children born to cohabiting parents are about five times more likely to experience their parents' separation than are children born to married parents (Osborne et al., 2007). Two factors contribute. First, cohabiters tend to be initially less committed to the ideal of enduring marriage. Second, they become even less marriage supporting while cohabiting.

Nonetheless, the institution of marriage endures. Worldwide, reports the United Nations, 9 in 10 heterosexual adults marry. And marriage is a predictor of happiness, sexual satisfaction, income, and physical and mental health (Scott et al., 2010). National Opinion Research Center surveys of nearly 50,000 Americans since 1972 reveal that 40 percent of married adults, though only 23 percent of unmarried adults, have reported being "very happy." Lesbian couples, too, report greater well-being than those who are alone (Peplau & Fingerhut, 2007; Wayment & Peplau, 1995). Moreover, neighborhoods with high marriage rates typically have low rates of social pathologies such as crime, delinquency, and emotional disorders among children (Myers & Scanzoni, 2005).

Try This

What do you think? Does marriage correlate with happiness because marital support and intimacy breed happiness, because happy people more often marry and stay married, or both?

Marriages that last are not always devoid of conflict. Some couples fight but also shower each other with affection. Other couples never raise their voices yet also seldom praise each other or nuzzle. Both styles can last. After observing the interactions of 2000 couples, John Gottman (1994) reported one indicator of marital success: at least a five-to-one ratio of positive to negative interactions. Stable marriages provide five times more instances of smiling, touching, complimenting, and laughing than of sarcasm, criticism, and insults. So, if you want to predict which newlyweds will stay together, don't pay attention to how passionately they are in love. The couples who make it are more often those who refrain from putting down their partners. To prevent a cancerous negativity, successful couples learn to fight fair (to state feelings without insulting) and to steer conflict away from chaos with comments like "I know it's not your fault" or "I'll just be quiet for a moment and listen."

"Our love for children is so unlike any other human emotion. I fell in love with my babies so quickly and profoundly, almost completely independently of their particular qualities. And yet 20 years later I was (more or less) happy to see them go—I had to be happy to see them go. We are totally devoted to them when they are little and yet the most we can expect in return when they grow up is that they regard us with bemused and tolerant affection."
-Developmental psychologist Alison Gopnik, "The Supreme Infant," 2010

Often, love bears children. For most people, this most enduring of life changes is a happy event. "I feel an overwhelming love for my children unlike anything I feel for anyone else," said 93 percent of American mothers in a national survey (Erickson & Aird, 2005). Many fathers feel the same. A few weeks after the birth of my first child I was suddenly struck by a realization: "So *this* is how my parents felt about me?"

When children begin to absorb time, money, and emotional energy, satisfaction with the marriage itself may decline (Doss et al., 2009). This is especially likely among employed women who, more than they expected, carry the traditional burden of doing the chores at home. Putting effort into creating an equitable relationship can thus pay double dividends: a more satisfying marriage, which breeds better parent-child relations (Erel & Burman, 1995).


Ariel Skelley/Getty Images

Although love bears children, children eventually leave home. This departure is a significant and sometimes difficult event. For most people, however, an empty nest is a happy place (Adelmann et al., 1989; Gorchoff et al., 2008). Many parents experience a "postlaunch honeymoon," especially if they maintain close relationships with their children (White & Edwards, 1990). As Daniel Gilbert (2006) has said, "The only known symptom of 'empty nest syndrome' is increased smiling."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Job satisfaction and life satisfaction Work can provide us with a sense of identity and competence and opportunities for accomplishment. Perhaps this is why challenging and interesting occupations enhance people's happiness.

WORK

For many adults, the answer to "Who are you?" depends a great deal on the answer to "What do you do?" For women and men, choosing a career path is difficult, especially during bad economic times. Even in the best of times, few students in their first two years of college or university can predict their later careers.

In the end, happiness is about having work that fits your interests and provides you with a sense of competence and accomplishment. It is having a close, supportive companion who cheers your accomplishments (Gable et al., 2006). And for some, it includes having children who love you and whom you love and feel proud of.

Well-Being Across the Life Span

54-4 Do self-confidence and life satisfaction vary with life stages?

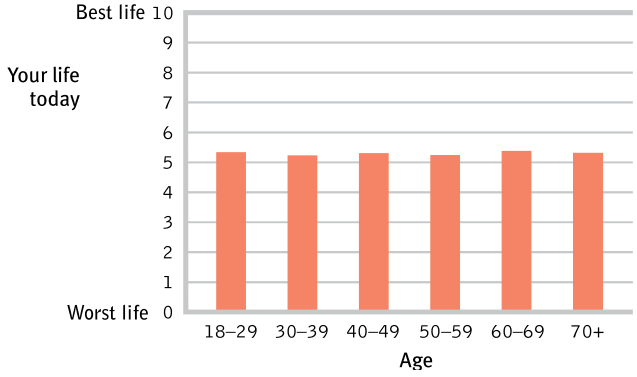
"When you were born, you cried and the world rejoiced. Live your life in a manner so that when you die the world cries and you rejoice." -Native American proverb

To live is to grow older. This moment marks the oldest you have ever been and the youngest you will henceforth be. That means we all can look back with satisfaction or regret, and forward with hope or dread. When asked what they would have done differently if they could relive their lives, people's most common answer has been "Taken my education more seriously and worked harder at it" (Kinnier & Metha, 1989; Roese & Summerville, 2005). Other regrets—"I should have told my father I loved him," "I regret that I never went to Europe"—have also focused less on mistakes made than on the things one *failed* to do (Gilovich & Medvec, 1995).

From the teens to midlife, people typically experience a strengthening sense of identity, confidence, and self-esteem (Huang, 2010; Robins & Trzesniewski, 2005). In later life, challenges arise: Income shrinks. Work is often taken away. The body deteriorates. Recall fades. Energy wanes. Family members and friends die or move away. The great enemy, death, looms ever closer. And for those in the terminal decline phase, life satisfaction does decline as death approaches (Gerstorf et al., 2008).

Small wonder that most presume that happiness declines in later life (Lacey et al., 2006). But worldwide, as Gallup researchers discovered, most find that the over-65 years are not notably unhappy (**FIGURE 54.4**). If anything, positive feelings, supported by enhanced emotional control, grow after midlife, and negative feelings subside (Stone et al., 2010; Urry & Gross, 2010). Older adults increasingly use words that convey positive emotions (Pennebaker & Stone, 2003), and they attend less and less to negative information. Compared with younger adults, for example, they are slower to perceive negative faces and more attentive to positive news (Carstensen & Mikels, 2005; Scheibe & Carstensen, 2010). Older adults also have fewer problems in their social relationships (Fingerman & Charles, 2010), and they experience less intense anger, stress, and worry (Stone et al., 2010).

Figure 54.4
Age and life satisfaction The Gallup Organization asked 142,682 people worldwide to rate their lives on a ladder, from 0 ("the worst possible life") to 10 ("the best possible life"). Age gave no clue to life satisfaction (Crabtree, 2010).



The aging brain may help nurture these positive feelings. Brain scans of older adults show that the amygdala, a neural processing center for emotions, responds less actively to negative events (but not to positive events), and it interacts less with the hippocampus, a brain memory-processing center (Mather et al., 2004; St. Jacques et al., 2009; Williams et al., 2006). Brain-wave reactions to negative images also diminish with age (Kisley et al., 2007).

Moreover, at all ages, the bad feelings we associate with negative events fade faster than do the good feelings we associate with positive events (Walker et al., 2003). This contributes to most older people's sense that life, on balance, has been mostly good. Given that growing older is an outcome of living (an outcome most prefer to early dying), the positivity of later life is comforting. Thanks to biological, psychological, and social-cultural influences, more and more people flourish into later life (**FIGURE 54.5**).

"At 20 we worry about what others think of us. At 40 we don't care what others think of us. At 60 we discover they haven't been thinking about us at all." -Anonymous

"The best thing about being 100 is no peer pressure." -Lewis W. Kuester, 2005, on turning 100

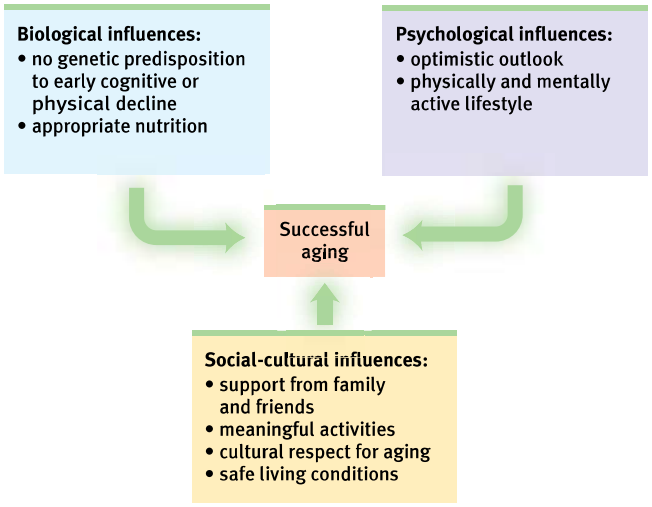


Figure 54.5
Biopsychosocial influences on successful aging
Numerous biological, psychological, and social-cultural factors affect the way we age. With the right genes, we have a good chance of aging successfully if we maintain a positive outlook and stay mentally and physically active as well as connected to family and friends in the community.

Death and Dying

54-5 A loved one's death triggers what range of reactions?

Warning: If you begin reading the next paragraph, you will die.

But of course, if you hadn't read this, you would still die in due time. Death is our inevitable end. Most of us will also suffer and cope with the deaths of relatives and friends. Usually, the most difficult separation is from a spouse—a loss suffered by five times more women than men. When, as usually happens, death comes at an expected late-life time, grieving may be relatively short-lived.

Grief is especially severe when a loved one's death comes suddenly and before its expected time on the social clock. The sudden illness or accident claiming a 45-year-old life partner or a child may trigger a year or more of memory-laden mourning that eventually subsides to a mild depression (Lehman et al., 1987).

For some, however, the loss is unbearable. One Danish long-term study of more than 1 million people found that about 17,000 of them had suffered the death of a child under 18. In the five years following that death, 3 percent of them had a first psychiatric hospitalization. This rate was 67 percent higher than the rate recorded for parents who had not lost a child (Li et al., 2005).

Even so, reactions to a loved one's death range more widely than most suppose. Some cultures encourage public weeping and wailing; others hide grief. Within any culture,

"Love—why, I'll tell you what love is: It's you at 75 and her at 71, each of you listening for the other's step in the next room, each afraid that a sudden silence, a sudden cry, could mean a lifetime's talk is over." -Brian Moore, *The Luck of Ginger Coffey*, 1960

"Consider, friend, as you pass by, as you are now, so once was I. As I am now, you too shall be. Prepare, therefore, to follow me."
-Scottish tombstone epitaph

individuals differ. Given similar losses, some people grieve hard and long, others less so (Ott et al., 2007). Contrary to popular misconceptions, however,

- terminally ill and bereaved people do not go through identical predictable stages, such as denial before anger (Friedman & James, 2008; Nolen-Hoeksema & Larson, 1999). A Yale study following 233 bereaved individuals through time did, however, find that yearning for the loved one reached a high point four months after the loss, with anger peaking, on average, about a month later (Maciejewski et al., 2007).
- those who express the strongest grief immediately do not purge their grief more quickly (Bonanno & Kaltman, 1999; Wortman & Silver, 1989).
- bereavement therapy and self-help groups offer support, but there is similar healing power in the passing of time, the support of friends, and the act of giving support and help to others (Baddeley & Singer, 2009; Brown et al., 2008; Neimeyer & Carrier, 2009). Grieving spouses who talk often with others or receive grief counseling adjust about as well as those who grieve more privately (Bonanno, 2004; Stroebe et al., 2005).

We can be grateful for the waning of death-denying attitudes. Facing death with dignity and openness helps people complete the life cycle with a sense of life's meaningfulness and unity—the sense that their existence has been good and that life and death are parts of an ongoing cycle. Although death may be unwelcome, life itself can be affirmed even at death. This is especially so for people who review their lives not with despair but with what Erik Erikson called a sense of *integrity*—a feeling that one's life has been meaningful and worthwhile.

Before You Move On

▶ ASK YOURSELF

In what ways are you looking forward to adulthood? What concerns do you have about your own transition into adulthood, and how do you think you might address them?

▶ TEST YOURSELF

Research has shown that living together before marriage predicts an increased likelihood of future divorce. Can you imagine two possible explanations for this correlation?

Answers to the Test Yourself questions can be found in Appendix E at the end of the book.

Module 54 Review

54-1 What physical changes occur during middle and late adulthood?

- Muscular strength, reaction time, sensory abilities, and cardiac output begin to decline in the late twenties and continue to decline throughout middle adulthood (roughly age 40 to 65) and late adulthood (the years after 65).
- Women's period of fertility ends with *menopause* around age 50; men have no similar age-related sharp drop in hormone levels or fertility.
- In late adulthood, the immune system weakens, increasing susceptibility to life-threatening illnesses.
- Chromosome tips (telomeres) wear down, reducing the chances of normal genetic replication.
- But for some, longevity-supporting genes, low stress, and good health habits enable better health in later life.

54-2 How does memory change with age?

- As the years pass, recall begins to decline, especially for meaningless information, but recognition memory remains strong.
- Developmental researchers study age-related changes (such as memory) with *cross-sectional studies* (comparing people of different ages) and *longitudinal studies* (retesting the same people over a period of years).
- "Terminal decline" describes the cognitive decline in the final few years of life.

54-3 What themes and influences mark our social journey from early adulthood to death?

- Adults do not progress through an orderly sequence of age-related social stages. Chance events can determine life choices.
- The *social clock* is a culture's preferred timing for social events, such as marriage, parenthood, and retirement.
- Adulthood's dominant themes are love and work, which Erikson called intimacy and generativity.

54-4 Do self-confidence and life satisfaction vary with life stages?

- Self-confidence tends to strengthen across the life span.
- Surveys show that life satisfaction is unrelated to age. Positive emotions increase after midlife and negative ones decrease.

54-5 A loved one's death triggers what range of reactions?

- People do not grieve in predictable stages, as was once supposed.
- Strong expressions of emotion may not purge grief, and bereavement therapy is not significantly more effective than grieving without such aid.
- Erikson viewed the late-adulthood psychosocial task as developing a sense of integrity (versus despair).

Multiple-Choice Questions

1. Which of the following changes does *not* occur with age?
a. Visual sharpness diminishes.
b. Distance perception is less acute.
c. Adaptation to light-level changes is less rapid.
d. The lens of the eye becomes more transparent.
e. Senses of smell and hearing diminish.

2. As telomeres shorten, aging cells may die without being replaced with perfect genetic replicas. This process is slowed by
a. smoking.
b. obesity.
c. stress.
d. aging.
e. exercise.

3. According to Erikson, which of the following is a dominant goal of adulthood?
a. Competence
b. Generativity
c. Performance
d. Identity
e. Connectedness

4. The aging brain may help nurture positive feelings that are reported by many older adults. Brain scans of older adults show that the _____, a neural processing center for emotions, responds less actively to negative events (but not to positive events), and it interacts less with the hippocampus, a brain memory-processing center.
a. amygdala
b. hypothalamus
c. pineal gland
d. thyroid gland
e. thalamus

5. Which of the following is true of menopause?

a. Both men and women experience menopause around the age of 50.
b. Men experience menopause around 50 years of age, but women experience menopause around 65 years of age.
c. Women experience menopause around 50 years of age, but men experience menopause around 65 years of age.
d. Women experience menopause around the age of 50, but men don't experience menopause.
e. Men experience menopause around the age of 65, but women don't experience menopause.

6. Which of the following would be considered an example of Erikson's concept of generativity?

a. A 25-year-old meets and marries the love of his life.
b. A 35-year-old earns a lot of money, though she doesn't particularly enjoy her job.
c. An 85-year-old looks back at a life well-lived and feels satisfied.
d. A 40-year-old takes pride in her work and how she has raised her children.
e. A 20-year-old decides to become a physician.

7. The _____ is a culturally determined timetable for certain events, such as having children and retirement.

a. critical period
b. menopause
c. intimacy phase
d. attachment stage
e. social clock

Practice FRQs

1. Describe two changes in cognitive ability during adulthood. What is one factor that can prevent the steepest decline?

Answer

1 point: There is a decline in recall over the course of adulthood.

1 point: There is a decline in speed of processing over the adult years.

1 point: Exercise can prevent the steepest decline.

2. Numerous biological, psychological, and social-cultural factors affect the way we age. Explain one example for each of the three that contributes to successful aging.

(3 points)